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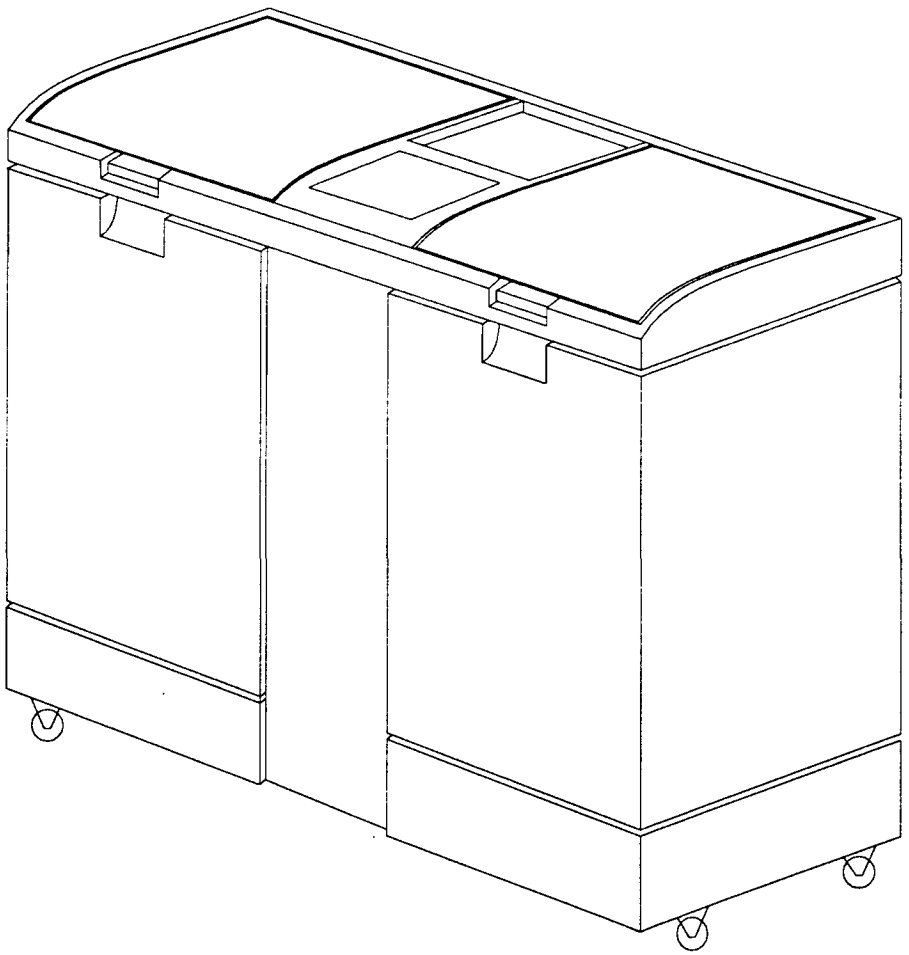
SERVICE MANUAL

for the

KODAK AUTOMIXER II Plus



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Schematic of the Rinse procedure

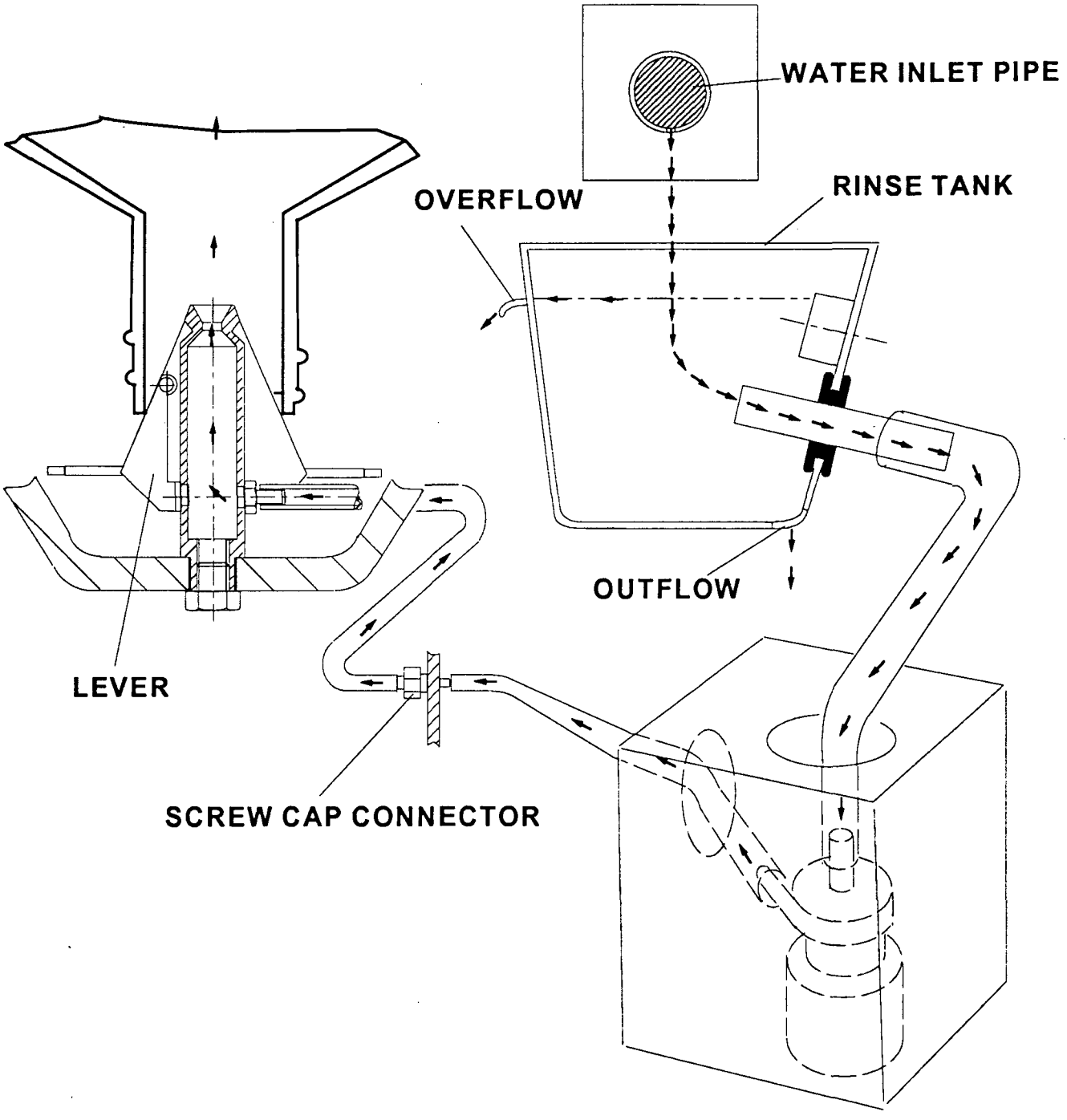


figure 1

Function of the bottle wash feature

As the microprocessor starts the "Bottle Rinse" procedure, the RINSE TANK will be filled from the WATER INLET PIPE. After a few seconds the RINSE PUMP will be energized and transfers the water from the RINSE TANK via the SCREW CAP CONNECTOR of the BASIN to the PIERCER. The water jet will sprinkle into the bottle (see figure 1).
If there is no bottle in the BASIN or the bottle is removed during the wash procedure, the water jet will open a lever in flow direction to avoid the creation of a fountain (see figure 2).

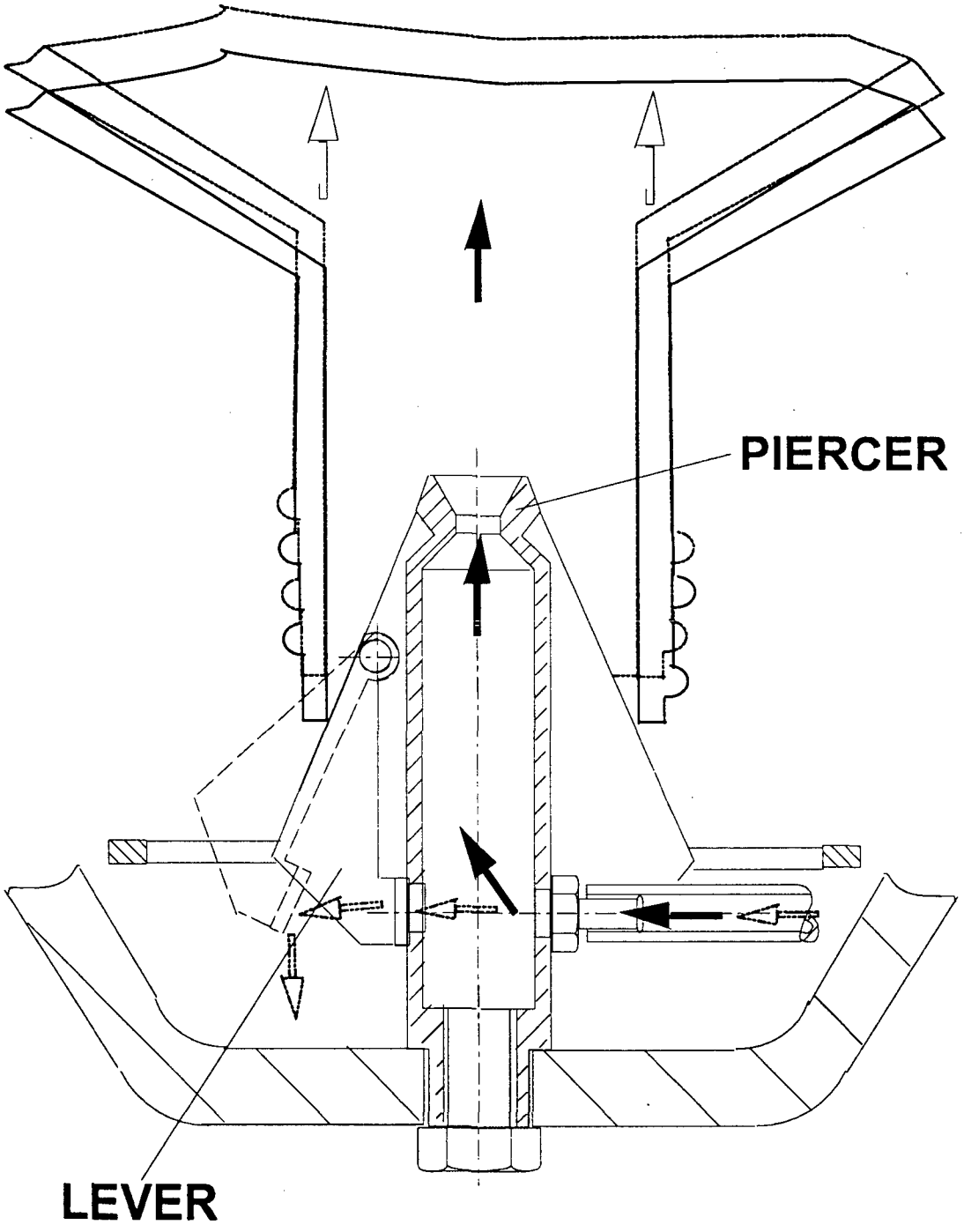
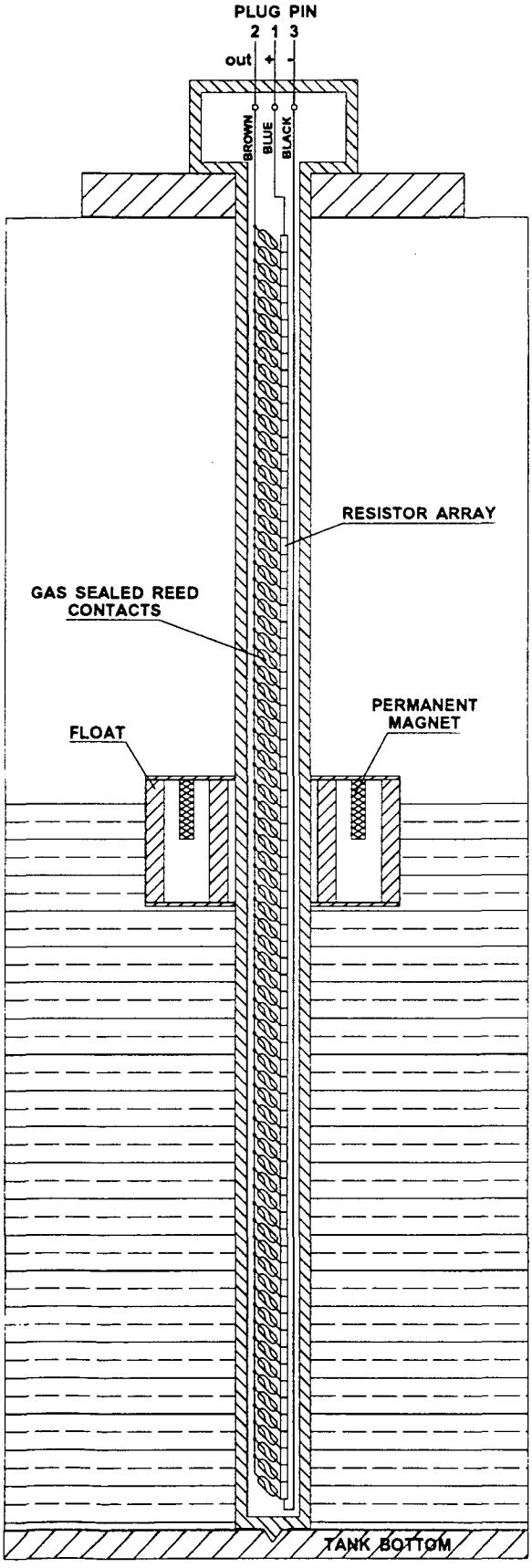


figure 2



REED CONTACT ARRAY

(Level Sensor)

Description:

The heart of the REED CONTACT ARRAY (used as a Level Sensor in the AUTOMIXER II Plus) is made up of 75 resistors and 75 gas sealed reed contacts. The resistors are connected in series.

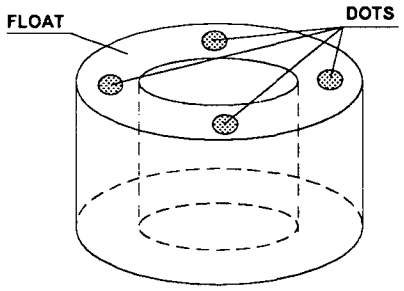
To each resistor a reed contact is connected. The resistance depends on the position of the float which contains a prermanent magnet. The magnet is actuating up to 4 reed contacts at the same time. The resistance and therefore the output voltage is in proportion to the level of liquid.

That means: High liquid level = low resistance = high voltage
low liquid level = high resistance = low voltage

Technical Specification:	
Connecting Cable:	PVC / 3 wires X 0.5mm, 220mm long
Connector:	Preh 71430-030
Housing:	Stainless Steel
Liquid Temperature Range:	-50 to 100° Centigrade Celsius
Total Resistance:	= 75 X 33 Ohm = 2475 Ohm
Each Resistor:	33 Ohm 1% 0.4W
No. of Resistors:	75
No. of Contacts:	75

NOTE !

For correct operation it is very important, that the FLOAT is installed with the four DOTS pointing up.



Check the Function in the AUTOMIXER II Plus:

If you lift the FLOAT quickly, a beep code should occur after entering to the SERVICE MODE (see page 8-10).

To reset into the OPERATING MODE just close the FRONT COVER.

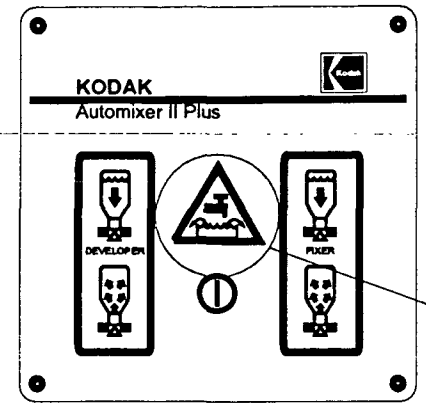
NOTE!

FLOAT damage!

Do not let the FLOAT drop to the TANK BOTTOM!

figure 3

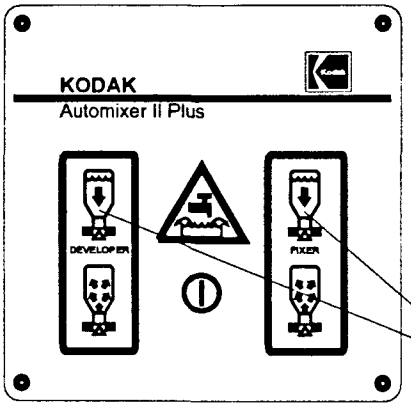
NEW FEATURES on the OPERATOR`S DISPLAY



Now the OPERATOR'S DISPLAY has more acoustic and optical funtions.

If there is no water flow in, the LED of the OVERFLOW SYMBOL starts to blink and the buzzer will give an intermittent signal.

OVERFLOW SYMBOL

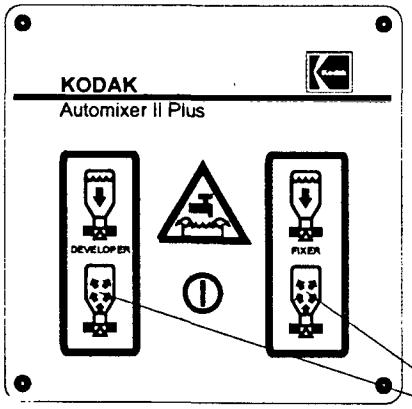


Two new symbols are added for the refill and the bottle rinse procedure.

1. Refill new chemistry

   The REFILL LED'S (fixer, developer or both) are on and the buzzer will give an intermittent signal.

REFILL LED'S



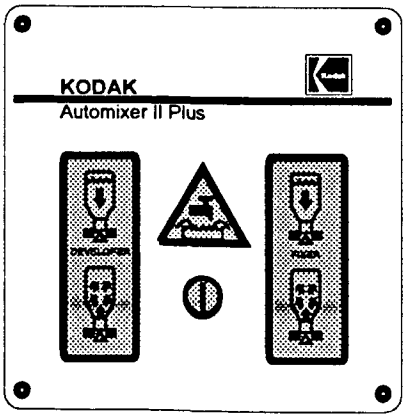
2. Bottle Rinse

   The BOTTLE RINSE LED'S (fixer, developer or both) are blinking.

NOTE

Do not remove the bottles during this mode !

BOTTLE RINSE LED'S



Warning in case of defective MICROCONTROLLER BOARD.

If a error is detected on the MICROCONTROLLER BOARD all LED'S are permanently on.
The buzzer gives a beep code (one long beep followed by five short beeps).
This beep code will be repeated every 15 minutes.

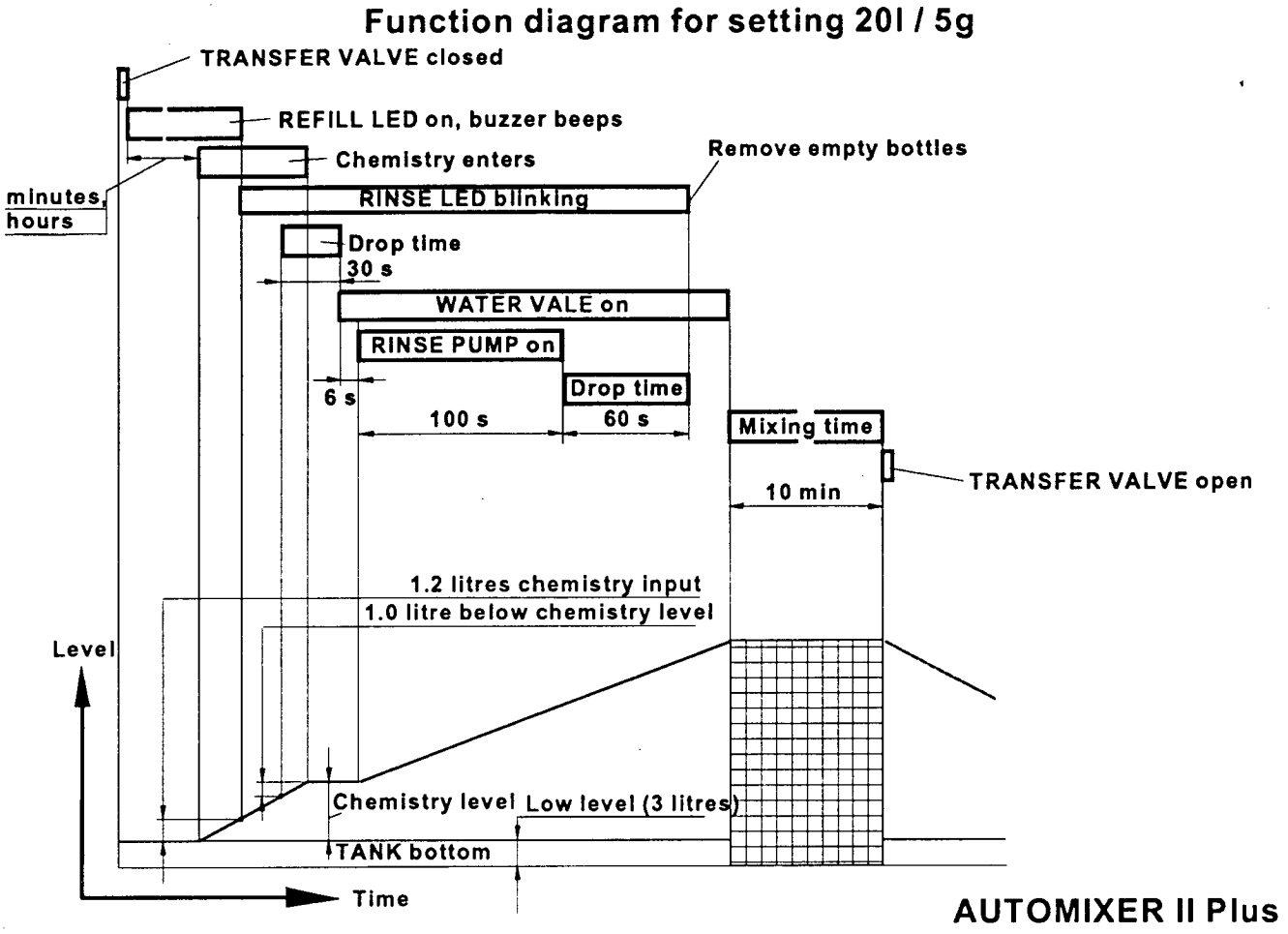


figure 4

Theory of Operation

Figure 4 shows the fill procedure for 20 litres (5 gallons) step by step.

1. The TRANSFER VALVE will close, at same the time as the mixing liquid has reached the low level (3 litres).

2. The REFILL LED starts to blink and the buzzer beeps intermittent.

3. CHEMISTRY BOTTLES now have to be inserted.

4. After 1.2 litres flow of chemistry, the REFILL LED will go off and the buzzer stops beeping. At the same time the RINSE LED starts to blink.

5. If the chemistry level is less than 1.2 litres above the nominal chemistry level, the program starts a drop time count for 30 seconds.

6. After the drop time is over, the chemistry level is reached and the WATER VALVE opens.

7. The water flows through the WATER INLET PIPE and fills the RINSE TANK. After 6 seconds the RINSE PUMP starts for a 100 seconds bottle wash procedure.

8. When the bottle wash procedure has finished a new drop time runs for 60 seconds.

9. After the 60 second drop time, the RINSE LED will go off and the bottles can be removed.

10. The WATER VALVE will close and the CIRCULATION PUMP starts the mixing procedure as the liquid reaches the 20 litres (5gallons) level.

11. After a 10 minutes mixing time the CIRCULATION PUMP stops, the TRANSFER VALVE opens and the solution is now ready for use.

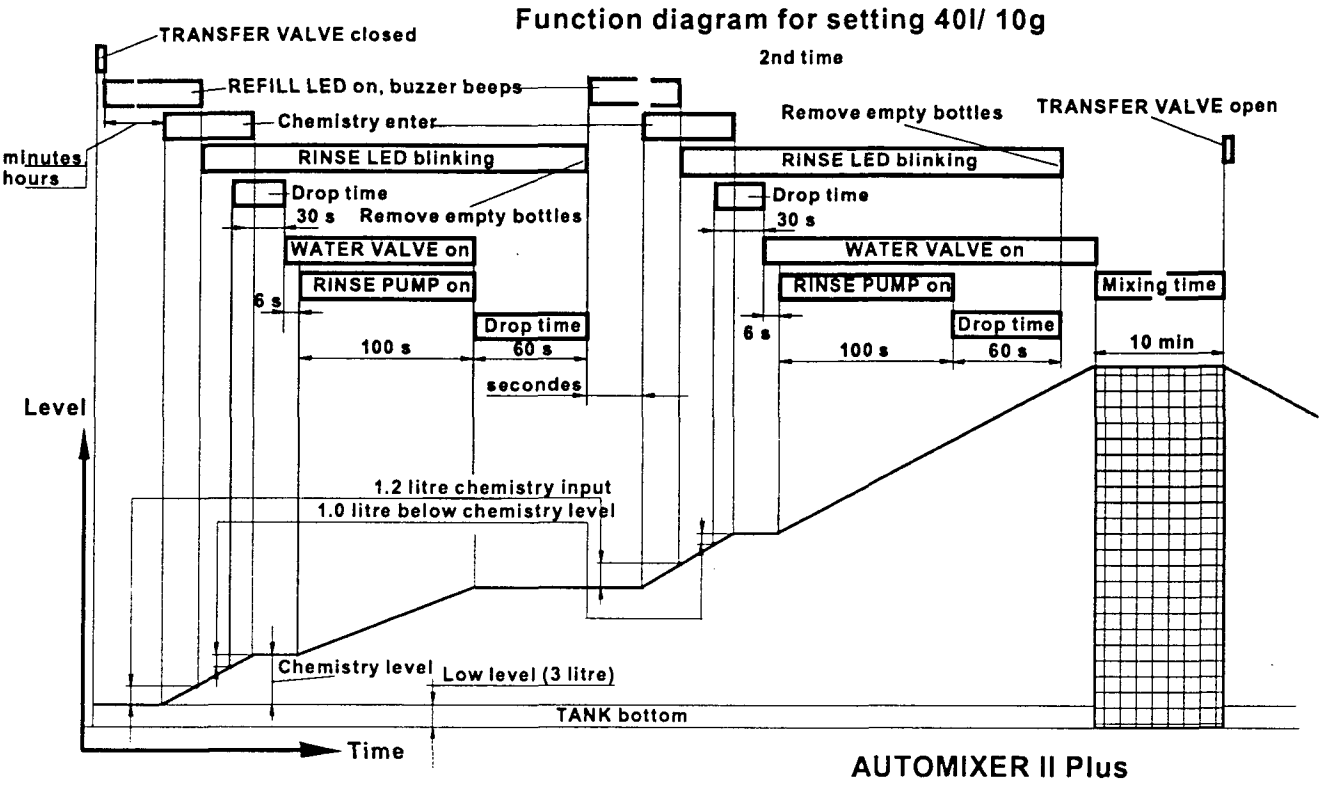


figure 5

Theory of Operation

Figure 5 shows the fill procedure for 40 litres (10 gallons) step by step.

The fill procedure for the 40 litres (10 gallons) application is very similar to the procedure shown in figure 4. The main difference is, that the WATER VALVE will be closed at the same time the RINSE PUMP stops during the first chemistry cycle. A second set of chemistry must be inserted after the first 60 second drop time is over.

NOTE

Do not wait too long with inserting the second set of chemistry, because the chemistry concentrate will be disturbed !

SERVICE MODE

To enter the service mode:

1. Remove the FRONT PANEL by pulling the bottom edge out to gain access to the SERVICE KEYBOARD (see figure 6).

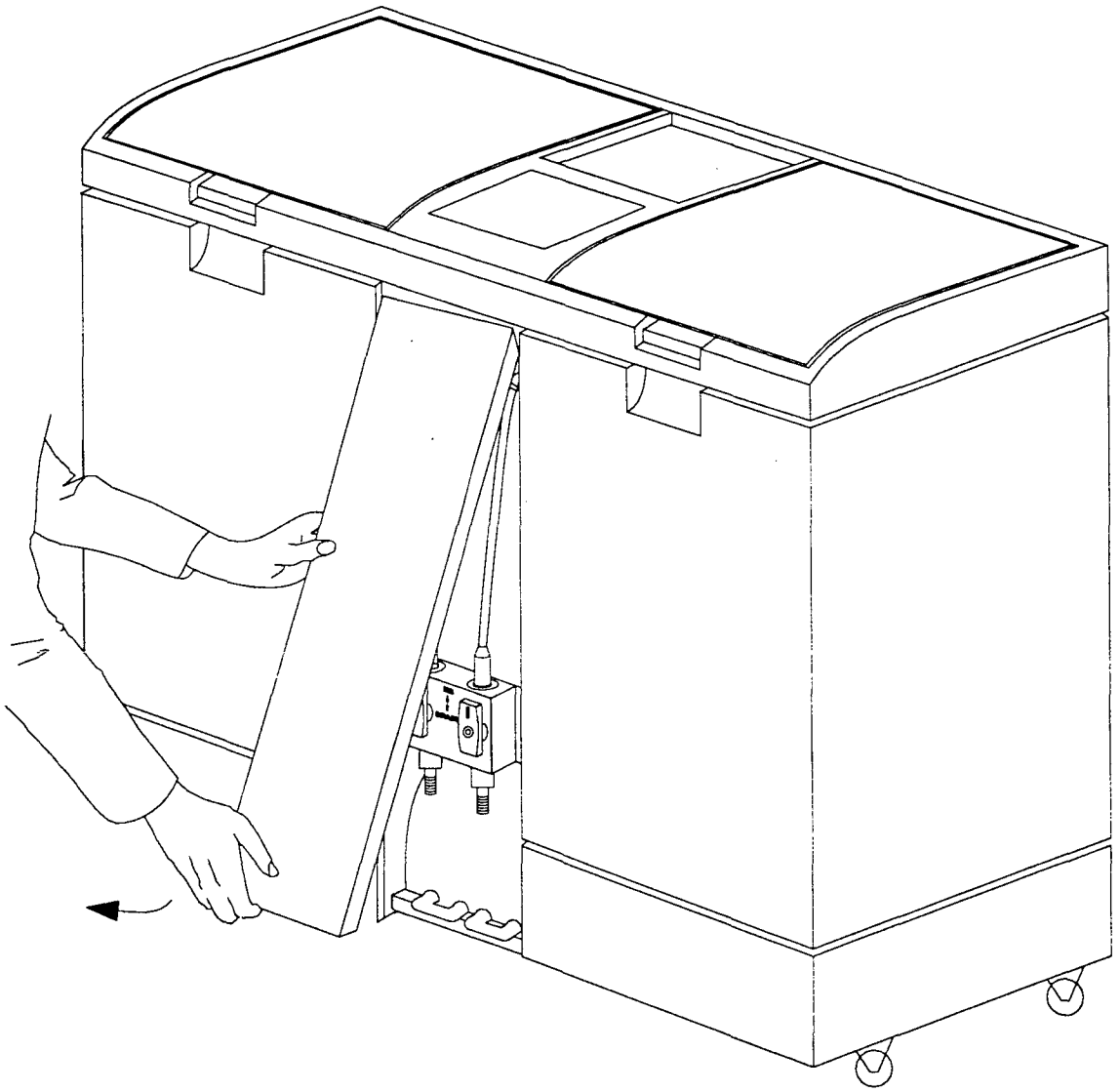


figure 6

2. Switch off the AUTOMIXER II Plus.

3. Press two switches on the SERVICE KEYBOARD at the same time and power on the the AUTOMIXER II Plus. To make sure, that the service mode is entered, press and hold the switches for approx. to two seconds (see figure 7).

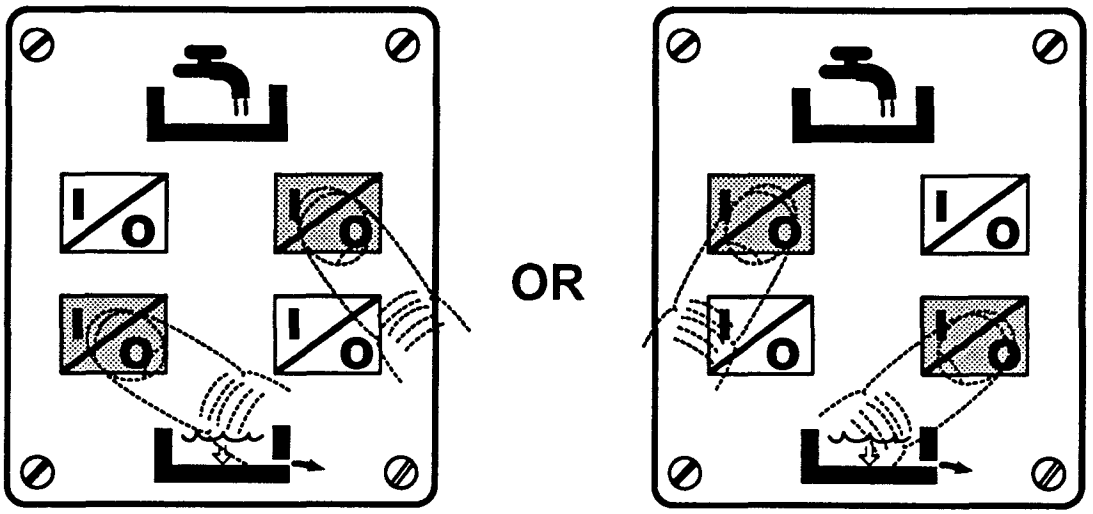


figure 7

4. If an error is sensed by the MICROCONTROLLER BOARD a long beep, followed by up to five short beeps will be generated (see figure 8). With multiple errors always the error with the highest priority will be detected. The next error will be announced after reentering the service mode if the first problem has been solved.

BEEP CODES

Failure	Sound
	— long beep - short beep
Developer REED CONTACT ARRAY defective	— -
Fixer REED CONTACT ARRAY defective	— - -
Both REED CONTACT ARRAY`s defective	— - - -
RAM, Pheripheral in- out and ROM defective	— - - - - -

figure 8

5. The WATER VALVE SWITCHES on the SERVICE KEYBOARD are used for different functions during the different modes (see figure 19). In SERVICE MODE they will energize the TRANSFER VALVES either for the DEVELOPER side (left hand SWITCH) or for the FIXER side (right hand SWITCH see figure 9).

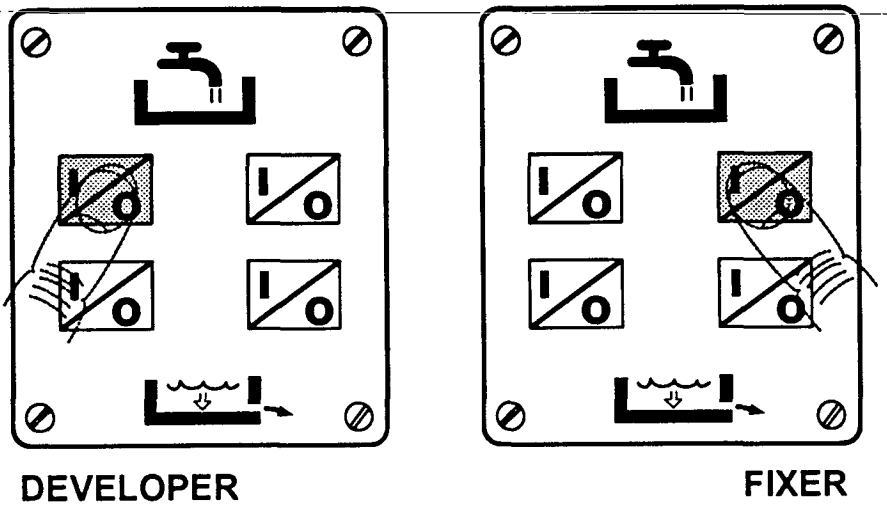


figure 9

6. The CIRCULATION PUMP SWITCHES energize the RINSE PUMPS either for the DEVELOPER side (left hand switch) or for the FIXER side (right hand switch see figure 10).

NOTE

Press these SWITCHES for a short time only, because the pumps should not run without solution !

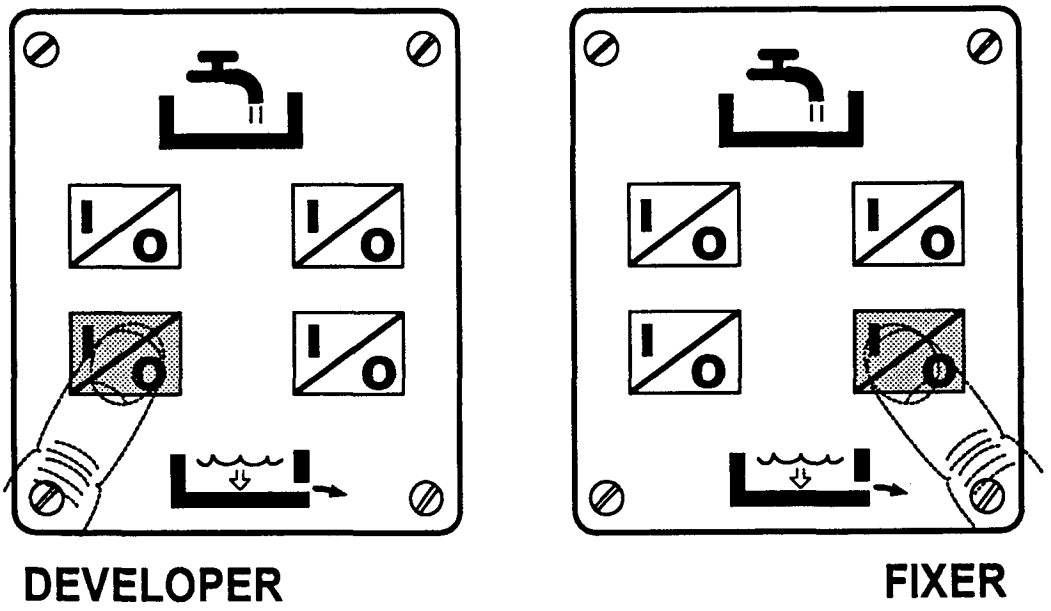


figure 10

ADVANCED CALIBRATION:

1. Remove the FRONT PANEL (see figure 6).

2. To enter into the ADVANCED CALIBRATION MODE power off the AUTOMIXER II Plus.

3. Press both CIRCULATION PUMP SWITCHES (DEVELOPER and FIXER) on the SERVICE KEYBOARD while simultaneously power on the AUTOMIXER II Plus (see figure 11).

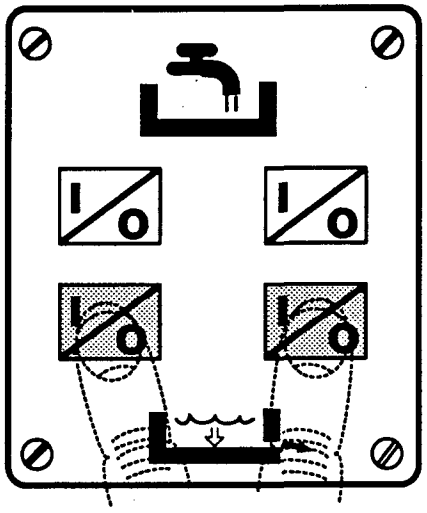


figure 11

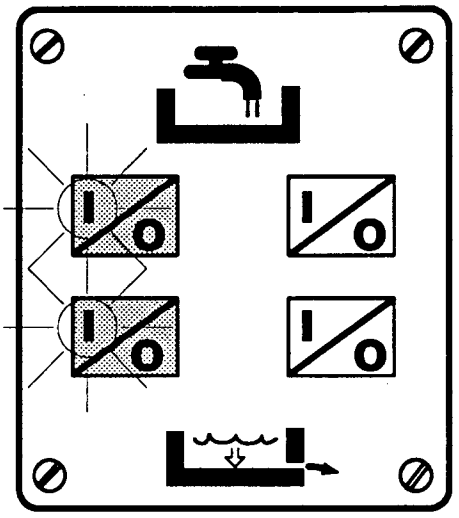


figure 12

4. If an advanced calibration setting was already performed, the status of the DEVELOPER setting will be shown (blinking LED'S) after a short time (see figure 12), followed by the FIXER setting (blinking LED'S, see figure 13).

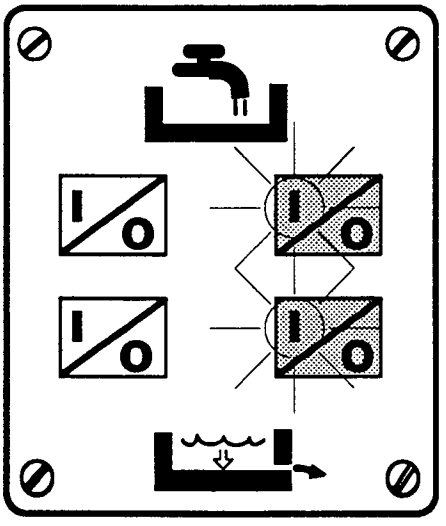


figure 13

5. The quantity of water flow in, can be reduced in four steps, to achieve a correct ratio between chemistry and water.

6. The following table (see figure 14) will help you in case the tank volume will increase. This is possible due to the weight of the solution. The table is showing the 4 steps in which the level of water can be reduced either on the RP-chemistry and on the RA-chemistry in litres.

Step	LED blinking	Buzzer beeps	5 gallons/20 litre RP/RA	10 gallons/40 litre RP/RA
1	1	1	- 0.625 litre	- 1.250 litre
2	2	2	- 1.250 litre	- 2.500 litre
3	3	3	- 1.875 litre	- 3.750 litre
4	4	4	- 2.500 litre	- 5.000 litre

figure 14

7. Press the CIRCULATION PUMP SWITCH one time (see figure 15+17). Step 1 of the table (figure 14) is now selected. A beep is audible and the LED is blinking one time.

8. For step 2, press the CIRCULATION PUMP SWITCH again. The same procedure has to be done for step 3+4. The number of optical and audible alarms shown in the table (figure 14) will be activated.

9. If it is necessary to go back step by step, press the WATER VALVE SWITCH one time for each step (see figure 16+18). The same optical and audible alarms as mentioned in step 7+8 and shown in the table (figure 14) will be actuated again.

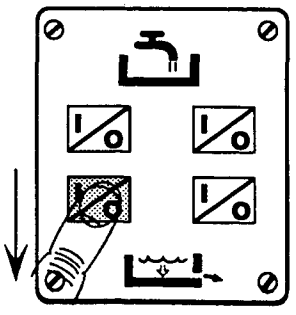


figure 15

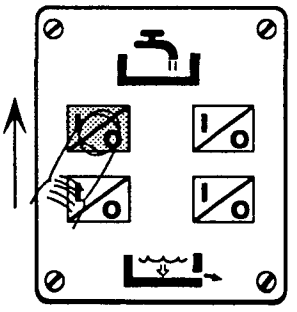


figure 16

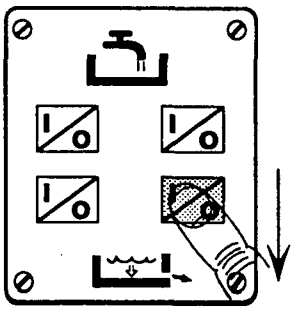


figure 17

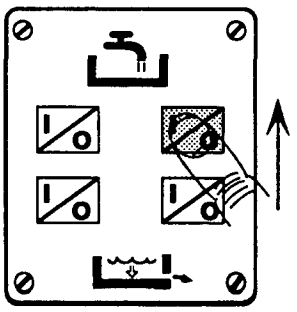


figure 18

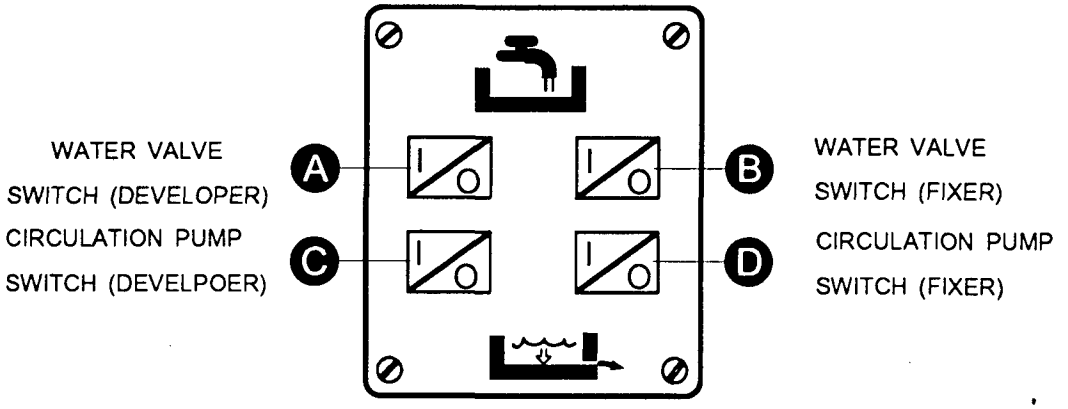
10. The description of the advanced calibration in the SERVICE MODE is the same for the DEVELOPER and the FIXER side of the AUTOMIXER II Plus.

NOTE

1. Because of the tank overflow it is not possible to increase the water flow to more than 40 litres / 10 gallons!

2. The software will not allow to increase the water flow to more than 20 litres / 5 gallons !

The Multifunction Keys of the SERVICE KEYBOARD SWITCHES:



KEY	MANUAL MODE	PRIMING MODE	SERVICE MODE	SOFTWARE CONTROLLED ADVANCED CAL. MODE
A	WATER VALVE (DEVELOPER)	ACTIVATES PRIMING DEVELOPER	TRANSFER VALVE (DEVELOPER)	DECREMENT OF WATER FLOW IN (DEVELOPER)
B	WATER VALVE (FIXER)	ACTIVATES PRIMING FIXER	TRANSFER VALVE (FIXER)	DECREMENT OF WATER FLOW IN (FIXER)
C	CIRCULATION PUMP (DEVELOPER)		RINSE PUMP (DEVELOPER)	INCREMENT OF WATER FLOW IN (DEVELOPER)
D	CIRCULATION PUMP (FIXER)		RINSE PUMP (FIXER.)	INCREMENT OF WATER FLOW IN (FIXER)
				see SERVICE MANUAL page 13-15

figure 19

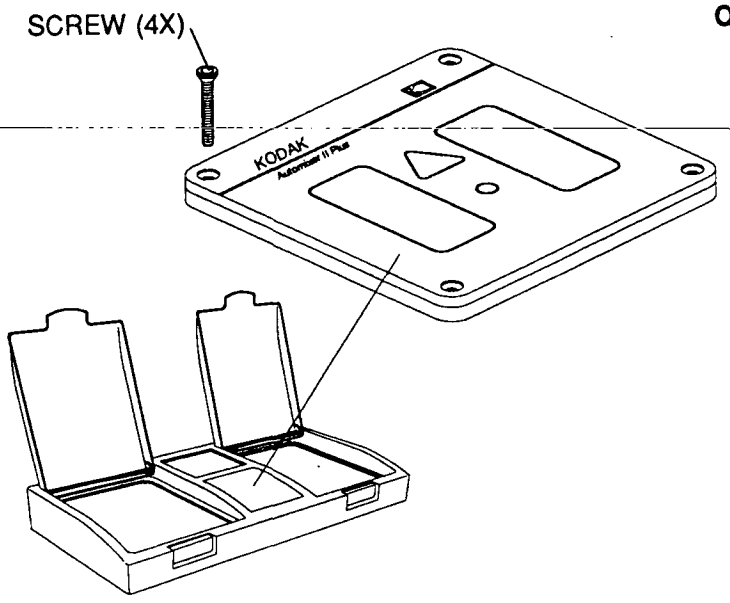


figure 21

OPERATOR'S DISPLAY

1. To remove the OPERATOR'S DISPLAY use a 2.0mm ALLEN WRENCH.

2. Disconnect the FLAT CABLE form PCB A2 controller board.

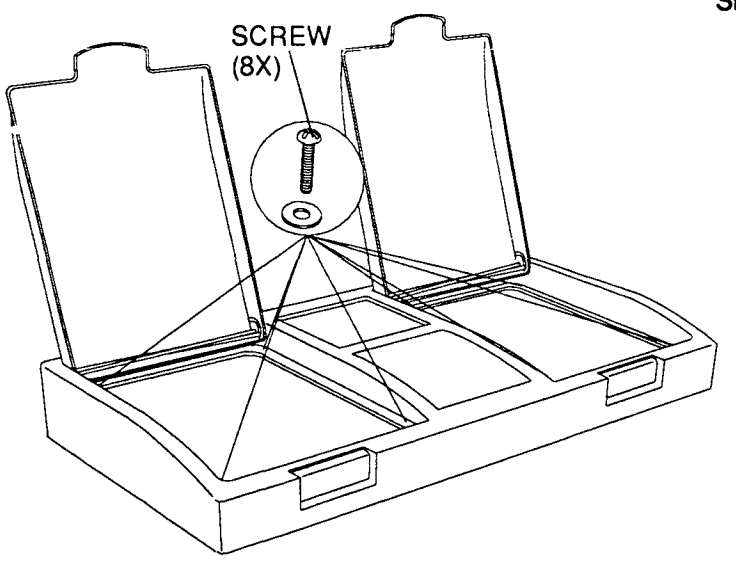


figure 20

SHROUD

1. To remove the SHROUD use a PHILLIPS SCREWDRIVER No.2 or a PHILLIPS INSERT BIT N0.2.

2. Disconnect the FAN ASSY from the PCB A2 controller board.

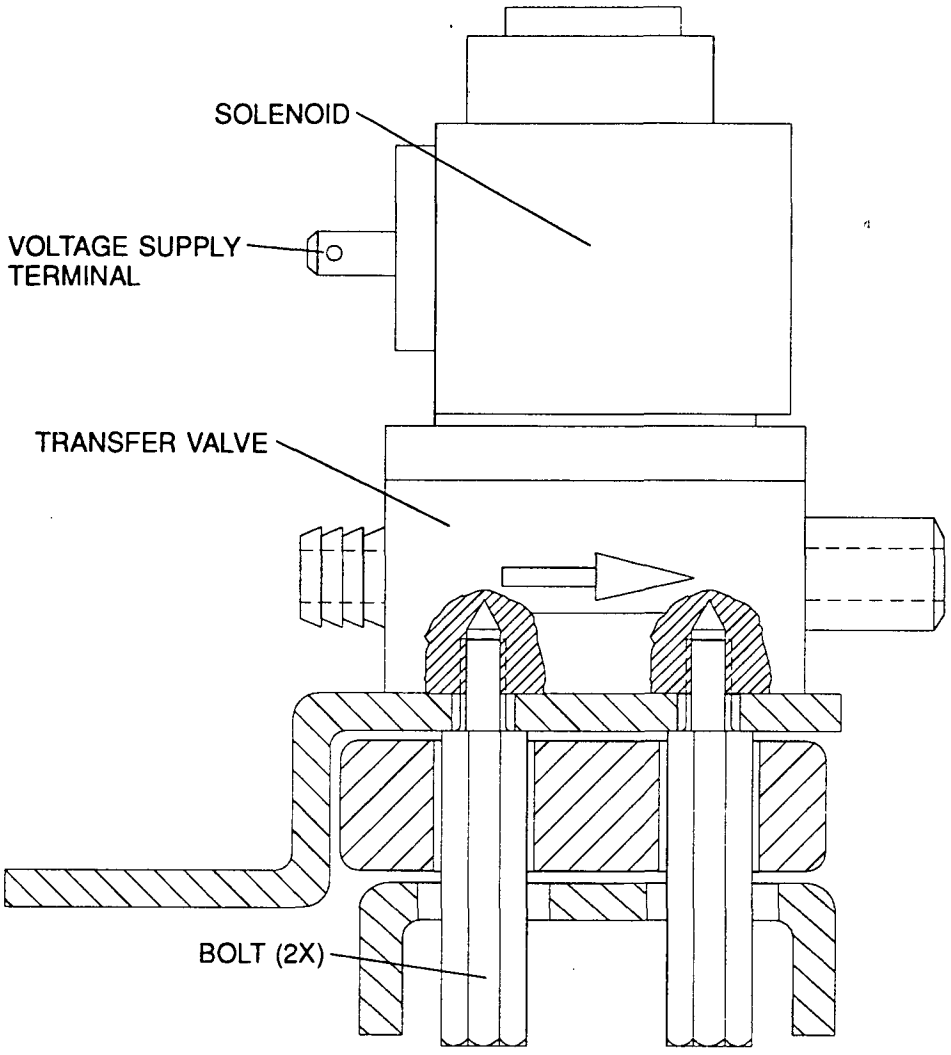


figure 22

TRANSFER VALVE

1. Disconnect the 2 VOLTAGE SUPPLY TERMINALS of the SOLENOID.

2. Use a 7.0mm METRIC SOCKET, a 7,0mm METRIC WRENCH or a OPEN-END WRENCH to remove the 2 BOLTS.

3. Open the 3 CLAMPS on the TUBE FITTINGS and take off the TUBES.

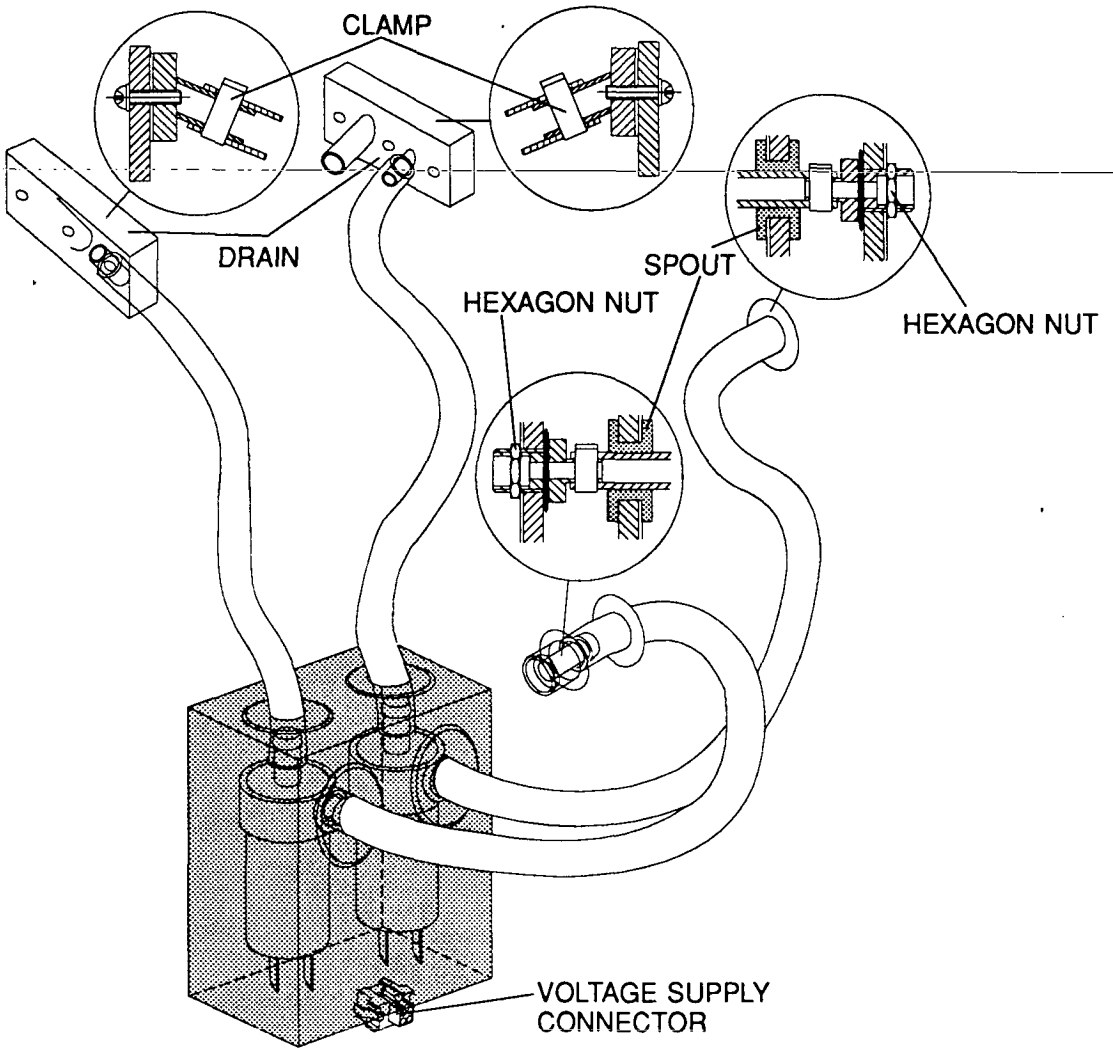


figure 23

RINSE PUMP ASSY

1. Disconnect the VOLTAGE SUPPLY CONNECTOR at the bottom of the RINSE PUMP ASSY housing.

2. Open the CLAMPS on the DRAINS and take off the TUBES (FIXER/DEVELOPER).

3. Loosen the HEXAGON NUTS by using a 19mm WRENCH or a ADJUSTABLE WRENCH. Pull the FITTINGS together with the SPOUTS out of the TANK wall.

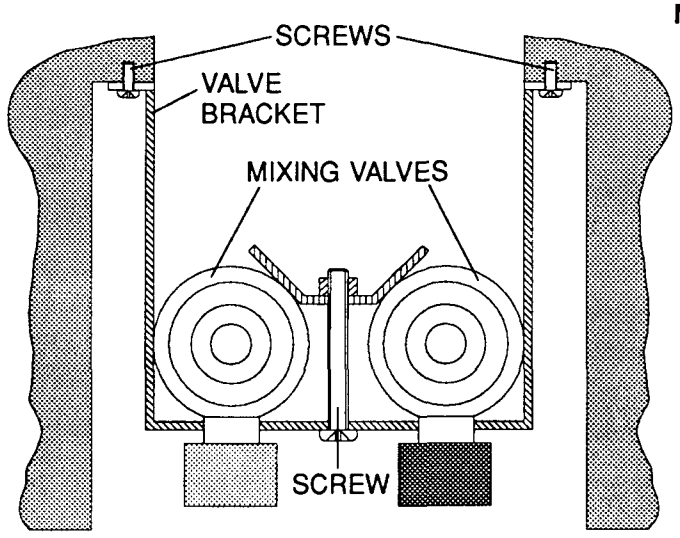


figure 24

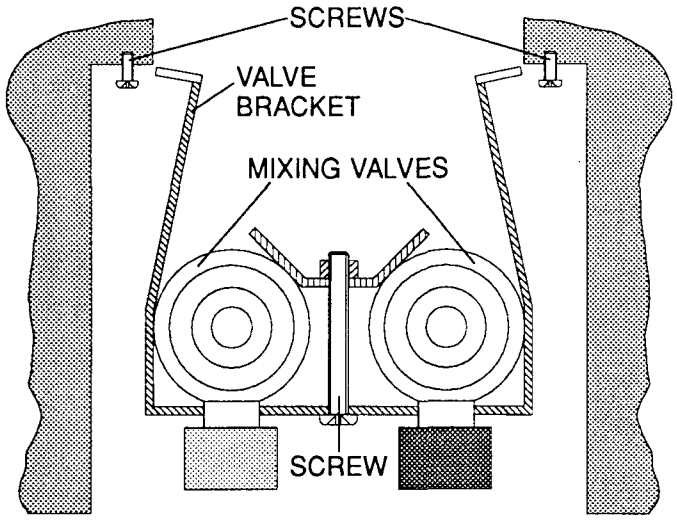


figure 25

MIXING VALVE ASSY

NOTE

The following procedure is needed in case a CIRCULATION PUMP or a MIXING VALVE has to be replaced!

1. Take off all TUBES from the MIXING VALVES (FIXER/DEVELOPER).

2. Loosen the two SCREWS by rotating them 2 times counterclockwise.

3. Loosen the SCREW in the middle of the VALVE BRACKET far enough, so that the BRACKET can be bent as shown in figure 25.

4. Move the MIXING VALVE ASSY out of the AUTOMIXER II Plus.

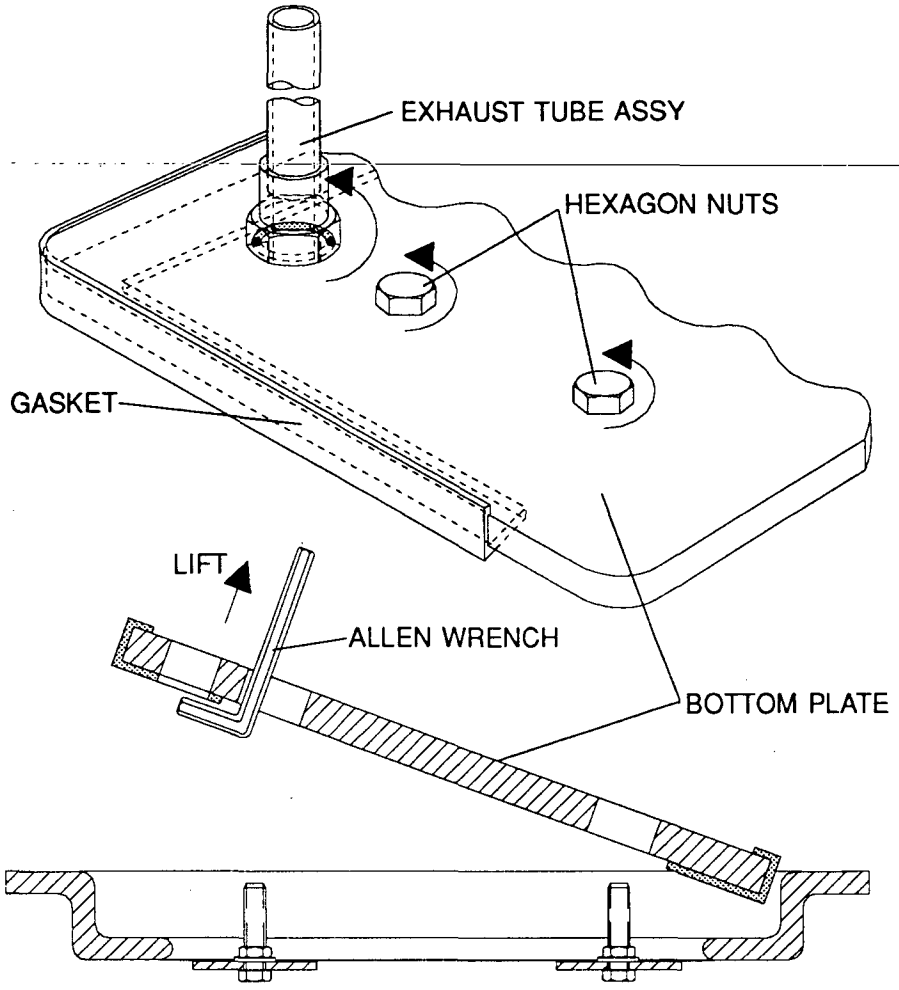


figure 26

BOTTOM PLATE (TANK)

1. Remove the two HEXAGON NUTS with a 24mm WRENCH or a ADJUSTABLE WRENCH.

2. Remove the EXHAUST TUBE ASSY by turning it counterclockwise (only by hand).

3. Use a ALLEN WRENCH (approx. 8mm or 10mm) and lift the BOTTOM PLATE carefully as shown in fugure 26.

NOTE

The EXHAUST TUBE ASSY has to be tightened by hand only!

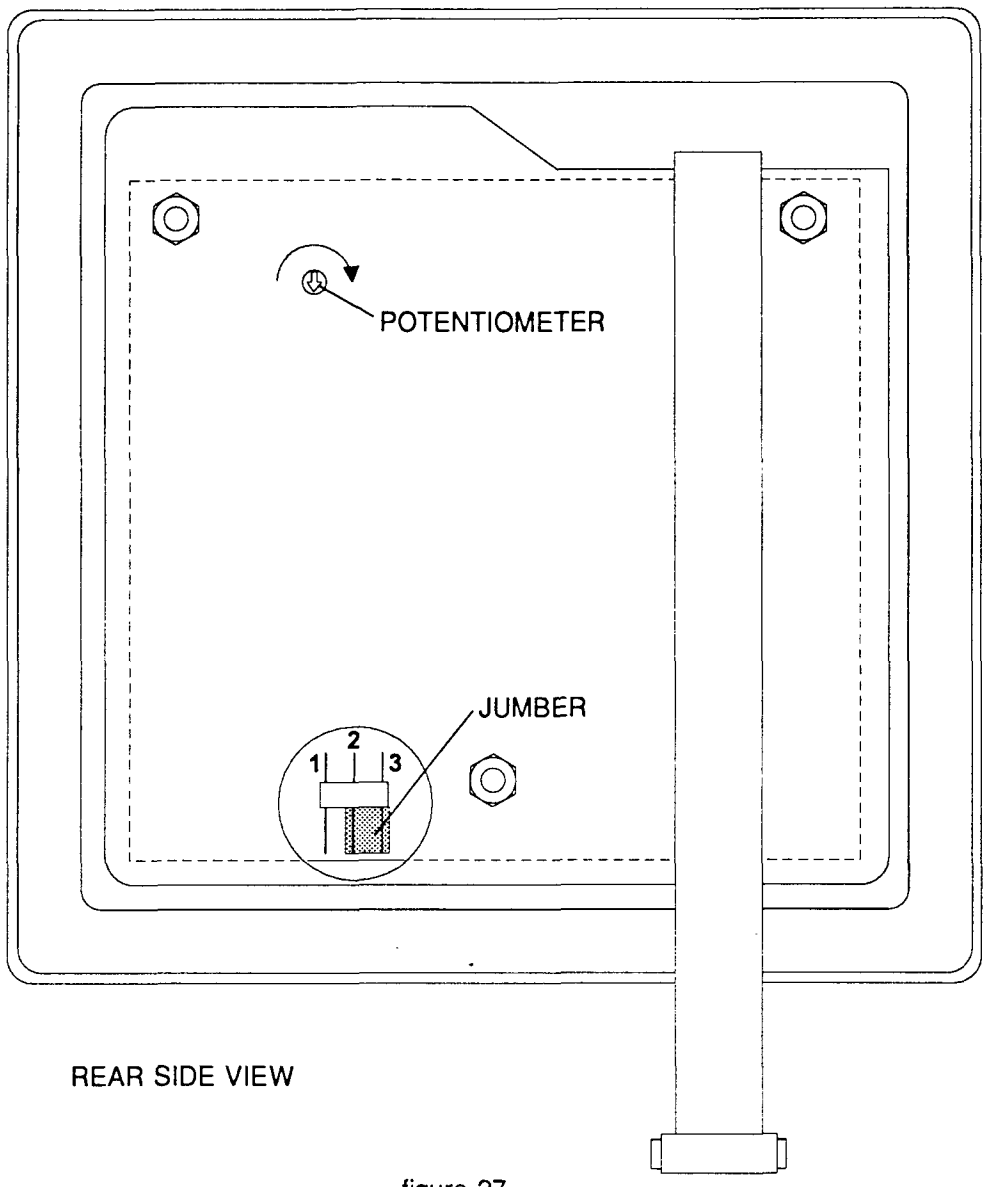


figure 27

OPERATOR'S DISPLAY ASSY

1. Use a small screwdriver to adjust the noise level of the BUZZER. Turning the potentiometer clockwise will increase the noise level (factory setting = medium).

2. Set the JUMBER (figure 27 = factory setting = bright) into the required position (dark or bright).

Automixer II Plus

Block Schematic I

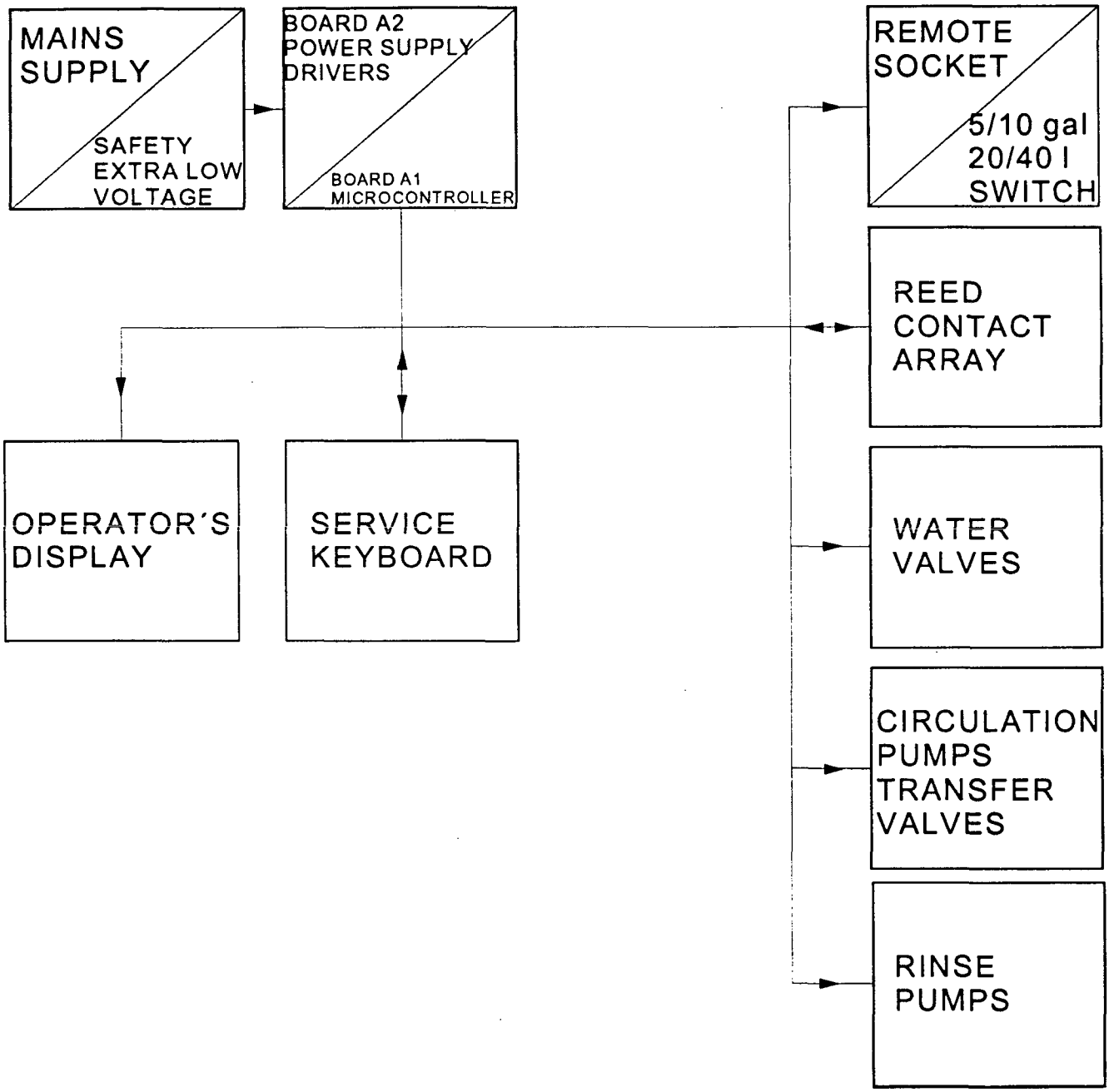


figure 28

Automixer II Plus

Block Schematic II

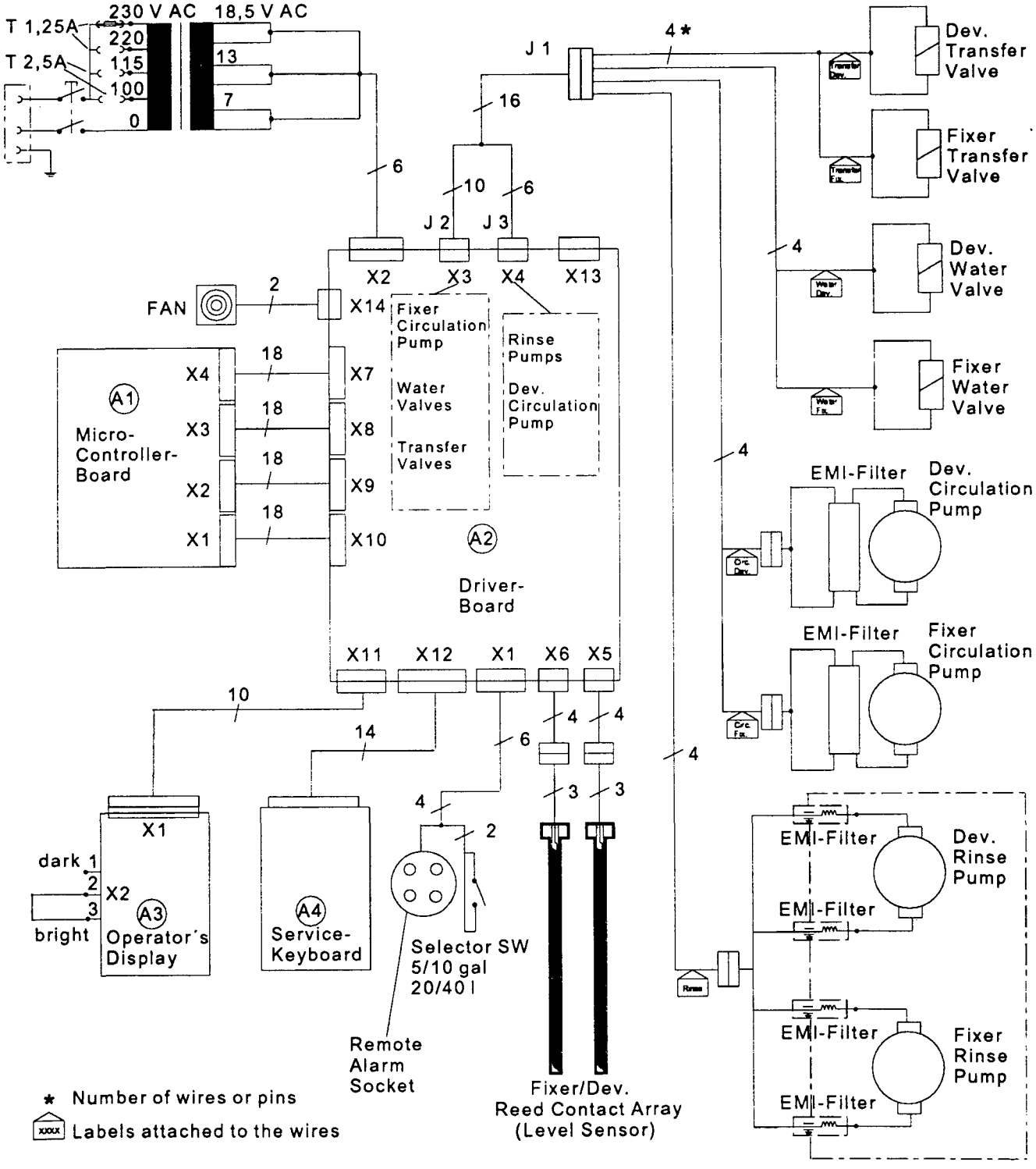


figure 29

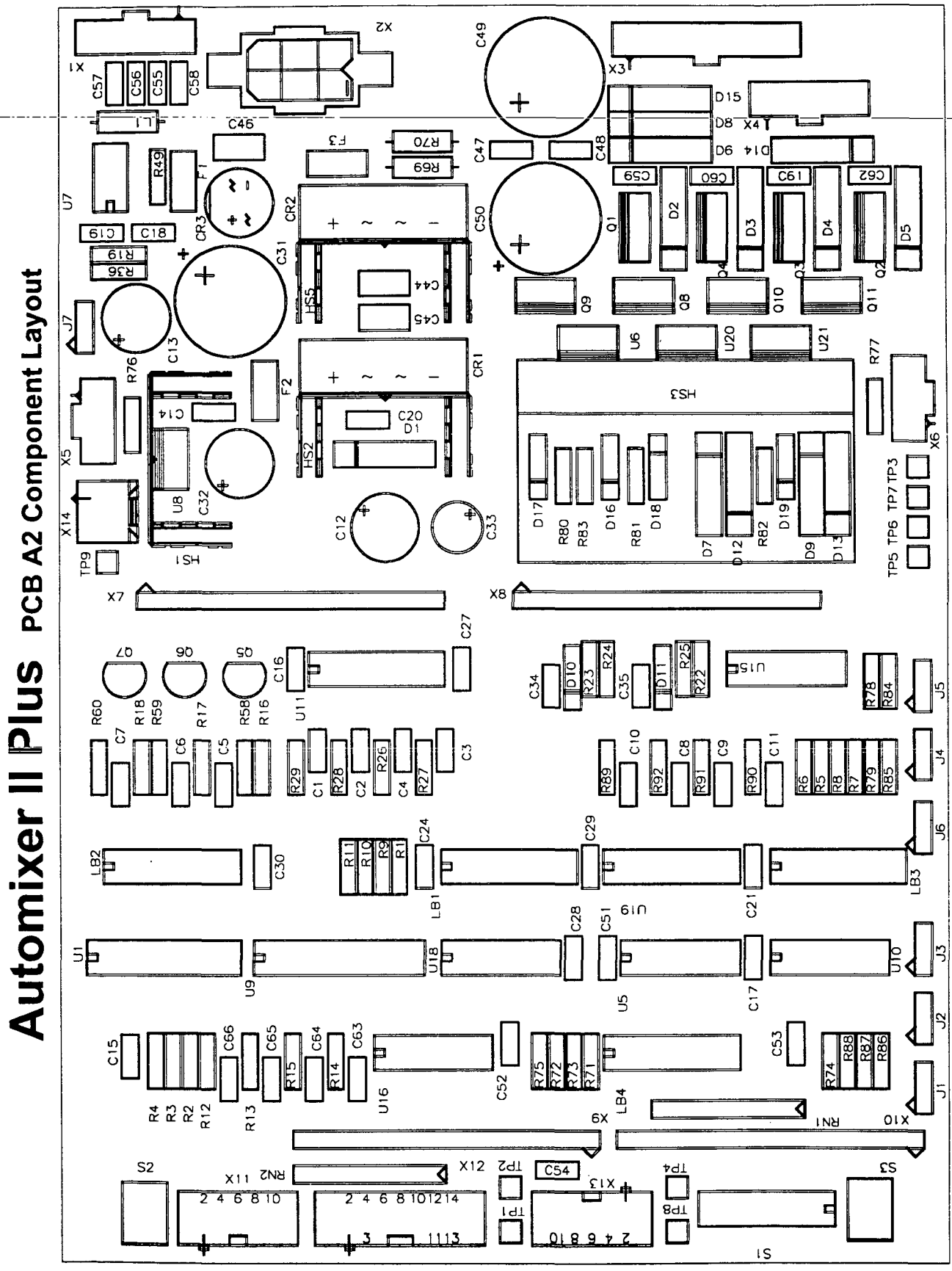


figure 30

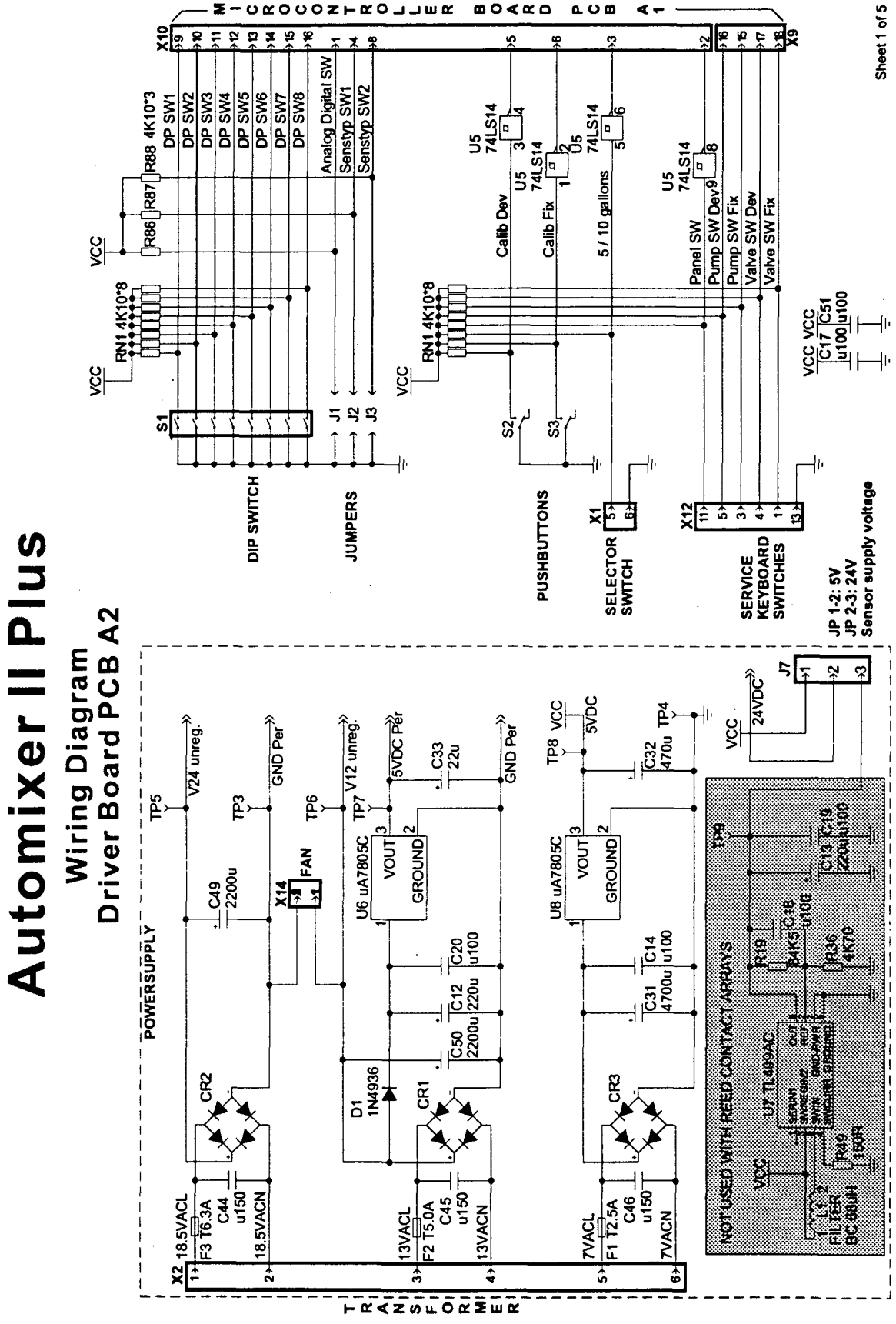

Automixer II Plus
Wiring Diagram
Driver Board PCB A2
Sheet 1 of 5
MICROCONTROLLER BOARD PCB A1
DIP SWITCH
JUMPERS
PUSHBUTTONS
SELECTOR SWITCH
SERVICE KEYBOARD SWITCHES
JP 1-2: 5V
JP 2-3: 24V
Sensor supply voltage
DP SW1
DP SW2
DP SW3
DP SW4
DP SW5
DP SW6
DP SW7
DP SW8
Analog Digital SW
Senstyp SW1
Senstyp SW2
Calib Dev
Calib Fix
5 / 10 gallons
Panel SW
Pump SW Dev
Pump SW Fix
Valve SW Dev
Valve SW Fix
TRANSFORMER
POWERSUPPLY
NOT USED WITH REED CONTACT ARRAYS
24VDC
5VDC
GND Per
V24 unreg.
V12 unreg.
5VDC Per
18.5VACL
18.5VACN
13VACL
13VACN
7VACL
7VACN
U6 uA7805C
U8 uA7805C
U7 TL499AC
FAN
FILTER
BC 8BUH

figure 31

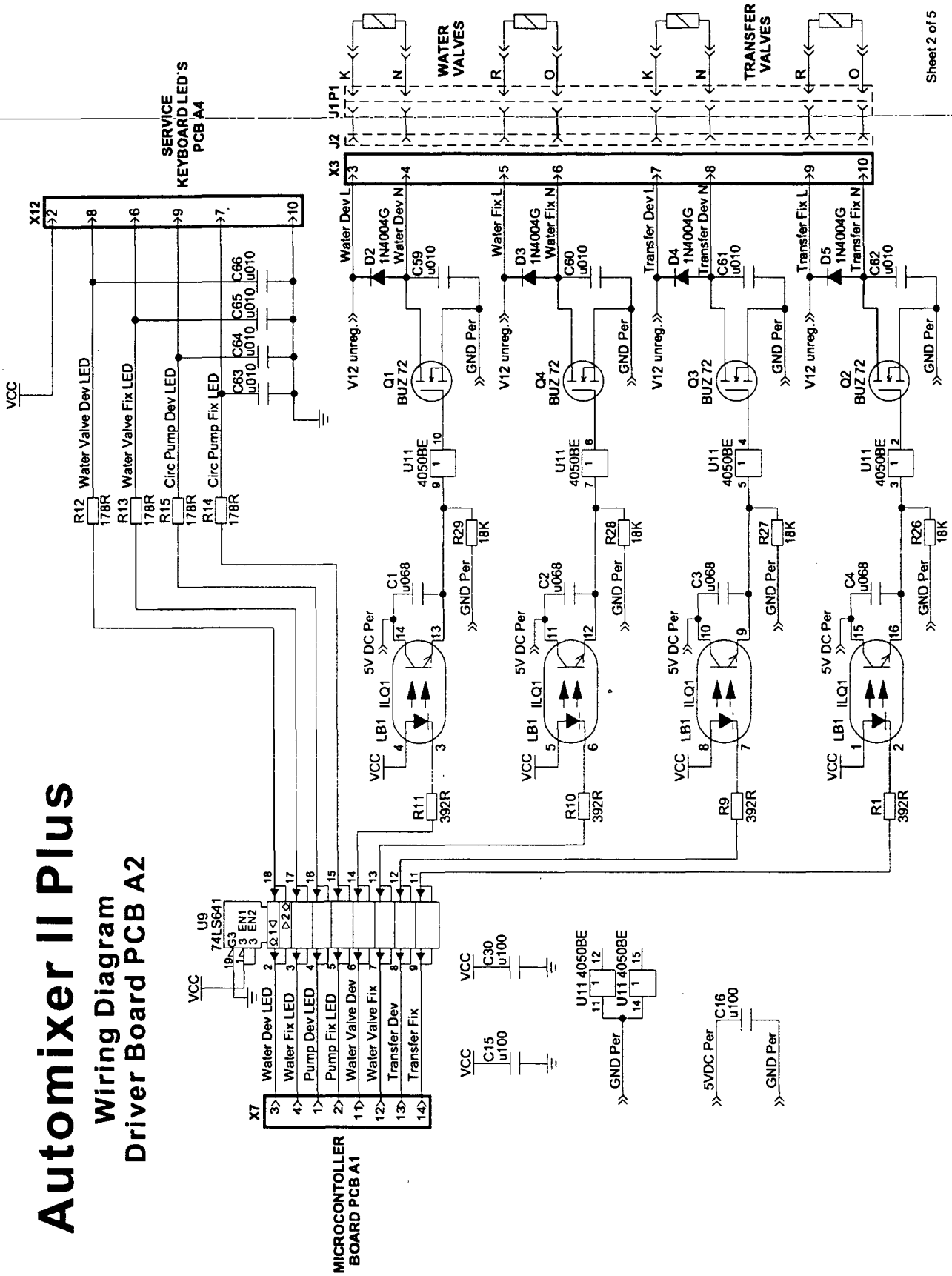

Automixer II Plus
Wiring Diagram
Driver Board PCB A2
SERVICE KEYBOARD LED'S PCB A4
MICROCONTOLLER BOARD PCB A1
WATER VALVES
TRANSFER VALVES
Sheet 2 of 5
Water Dev LED
Water Fix LED
Pump Dev LED
Pump Fix LED
Water Valve Dev
Water Valve Fix
Transfer Dev
Transfer Fix
Water Valve Dev LED
Water Valve Fix LED
Circ Pump Dev LED
Circ Pump Fix LED
Water Dev L
Water Dev N
Water Fix L
Water Fix N
Transfer Dev L
Transfer Dev N
Transfer Fix L
Transfer Fix N
V12 unreg.
GND Per
5V DC Per
VCC
5VDC Per

figure 32

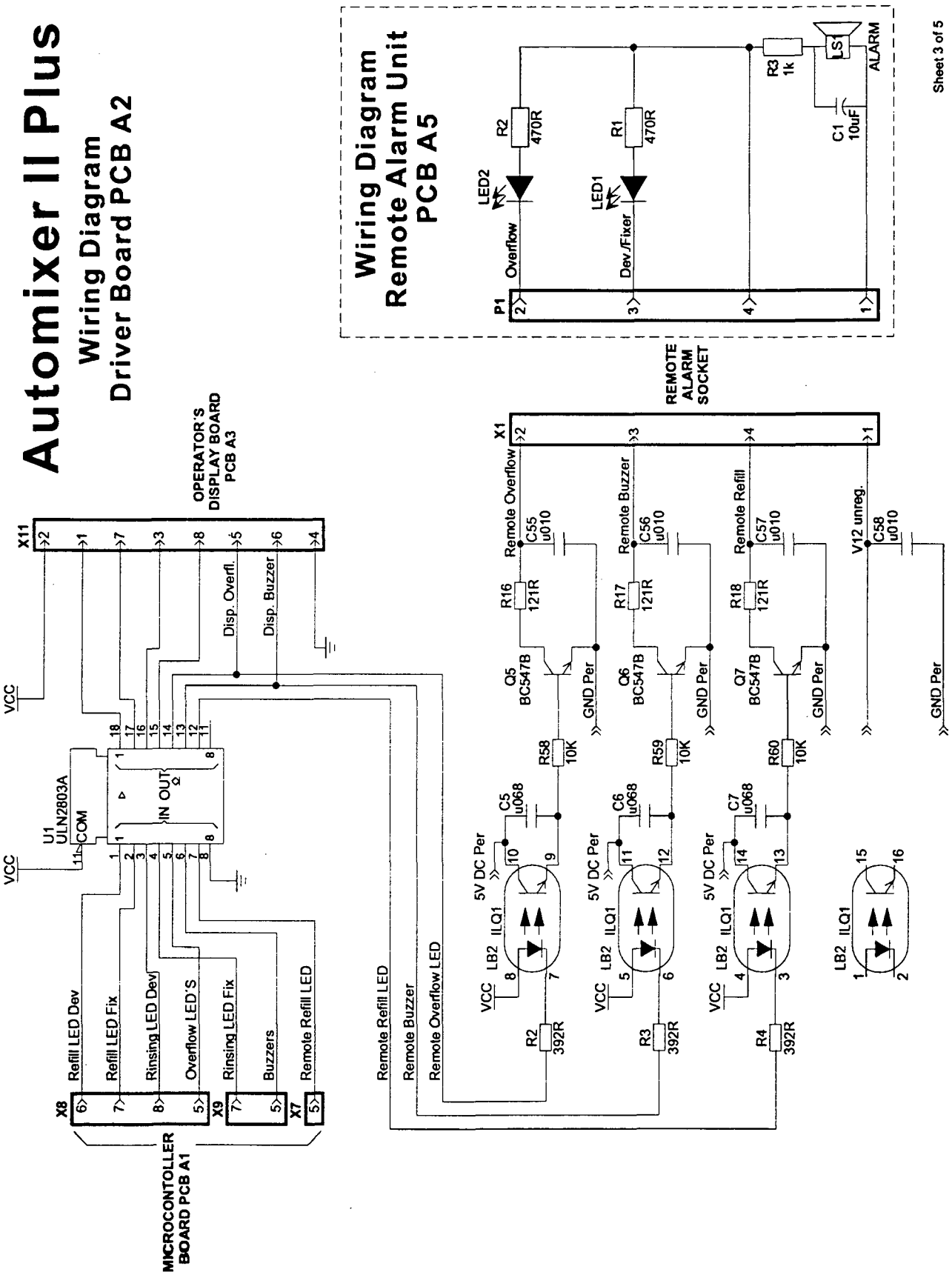

Automixer II Plus
Wiring Diagram
Driver Board PCB A2
Wiring Diagram
Remote Alarm Unit
PCB A5
Sheet 3 of 5
OPERATOR'S
DISPLAY BOARD
PCB A3
REMOTE
ALARM
SOCKET
MICROCONTOLLER
BOARD PCB A1
X11
X1
X8
X9
X7
P1
U1
ULN2803A
COM
IN OUT
VCC
GND Per
5V DC Per
LB2
ILQ1
LED1
LED2
Overflow
Dev./Fixer
ALARM
LS1
R1 470R
R2 470R
R3 1k
C1 10uF
R16 121R
R17 121R
R18 121R
R58 10K
R59 10K
R60 10K
R2 392R
R3 392R
R4 392R
C5 u068
C6 u068
C7 u068
C55 u010
C56 u010
C57 u010
C58 u010
Q5 BC547B
Q6 BC547B
Q7 BC547B
Remote Overflow
Remote Buzzer
Remote Refill
V12 unreg.
Disp. Overfl.
Disp. Buzzer
Refill LED Dev
Refill LED Fix
Rinsing LED Dev
Overflow LED'S
Rinsing LED Fix
Buzzers
Remote Refill LED
Remote Buzzer
Remote Overflow LED

figure 33

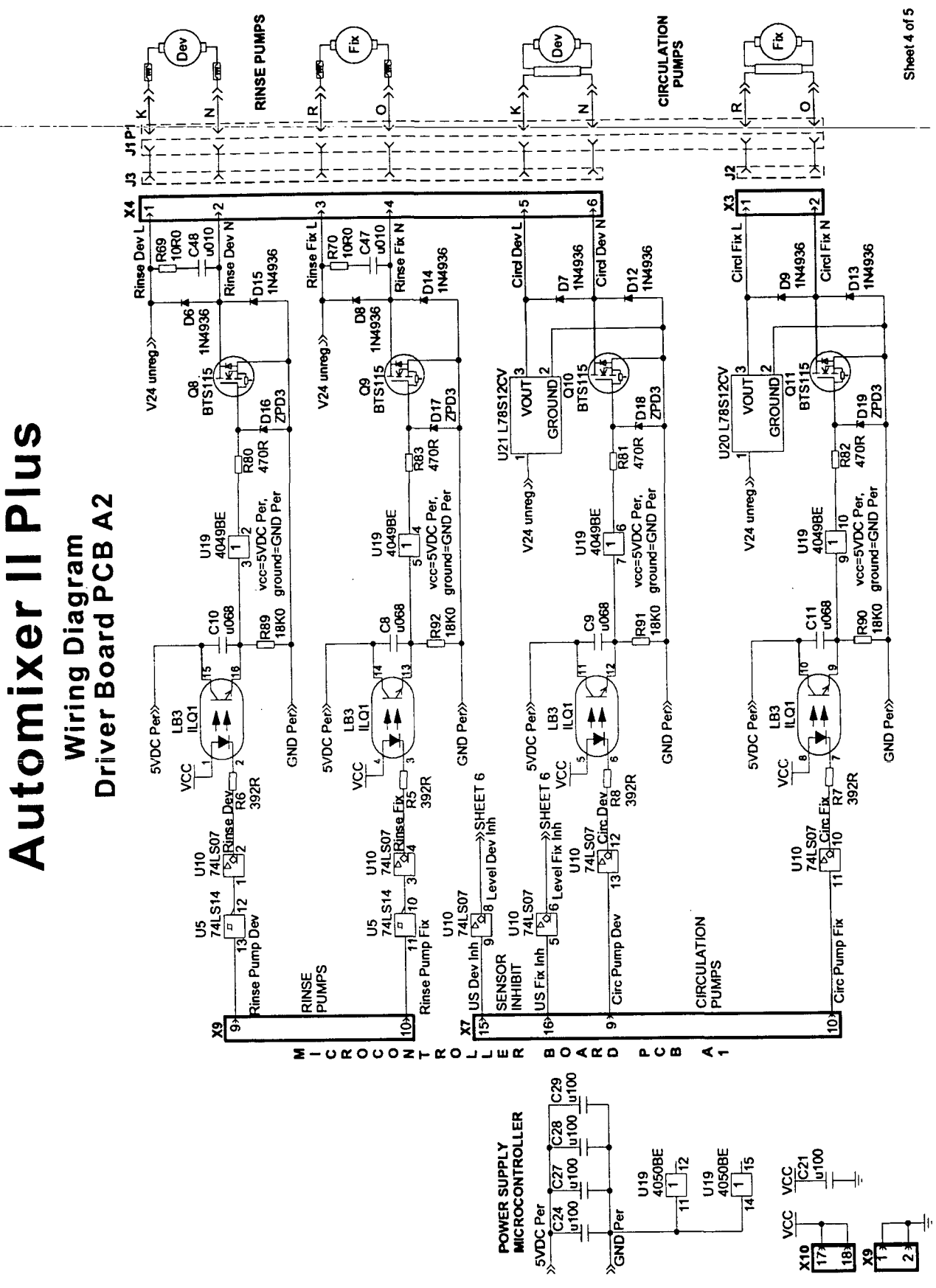

Automixer II Plus
Wiring Diagram
Driver Board PCB A2
Sheet 4 of 5
RINSE PUMPS
CIRCULATION PUMPS
Rinse Dev L
Rinse Dev N
Rinse Fix L
Rinse Fix N
Circl Dev L
Circl Dev N
Circl Fix L
Circl Fix N
V24 unreg
5VDC Per
GND Per
vcc=5VDC Per, ground=GND Per
Rinse Pump Dev
Rinse Pump Fix
Circ Pump Dev
Circ Pump Fix
US Dev Inh
US Fix Inh
SENSOR INHIBIT
SHEET 6
Level Dev Inh
Level Fix Inh
MICROCONTROLLER BOARD PCB A1
POWER SUPPLY MICROCONTROLLER

figure 34

Automixer II Plus

Wiring Diagram
Driver Board PCB A2

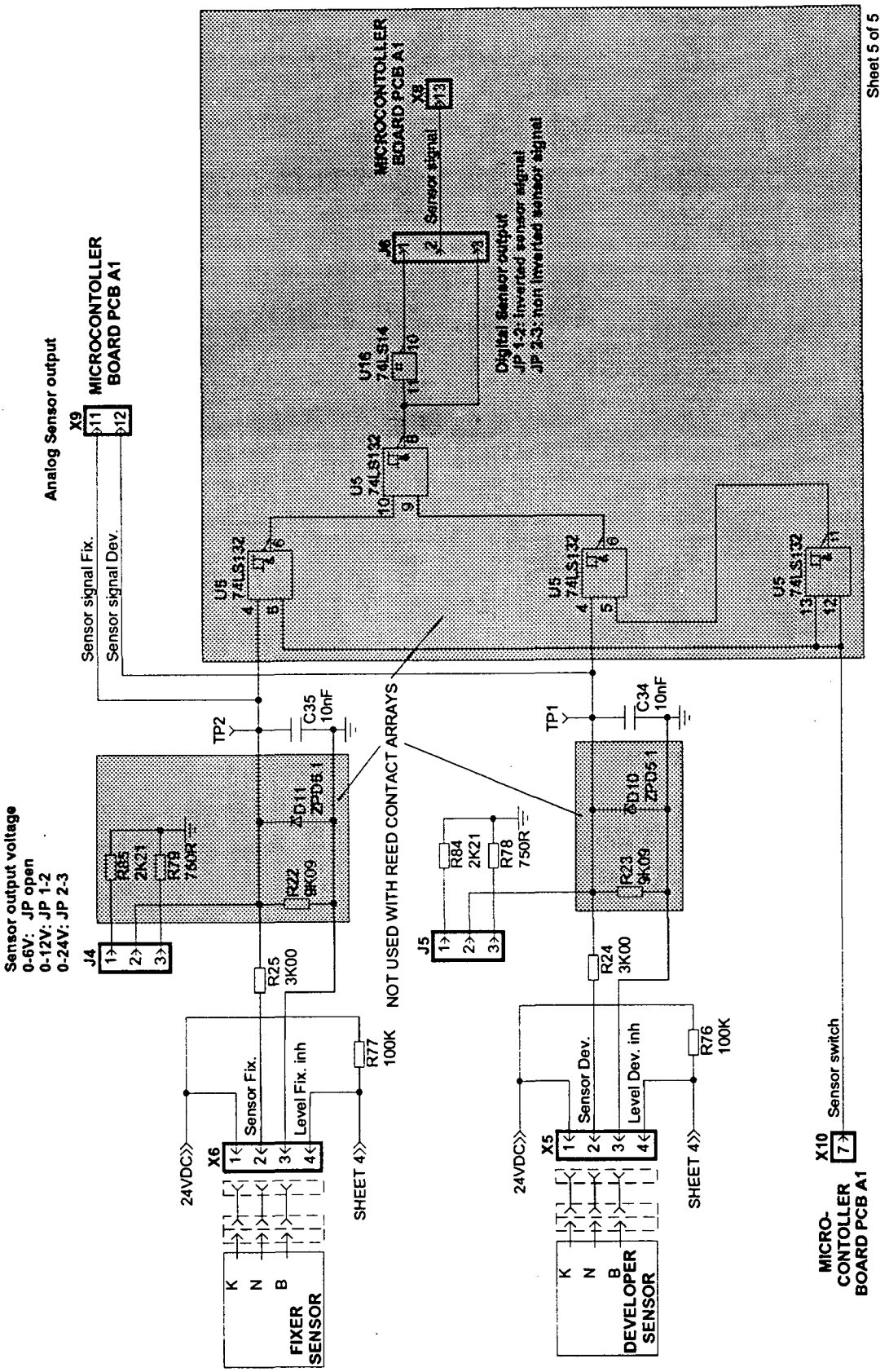


figure 35

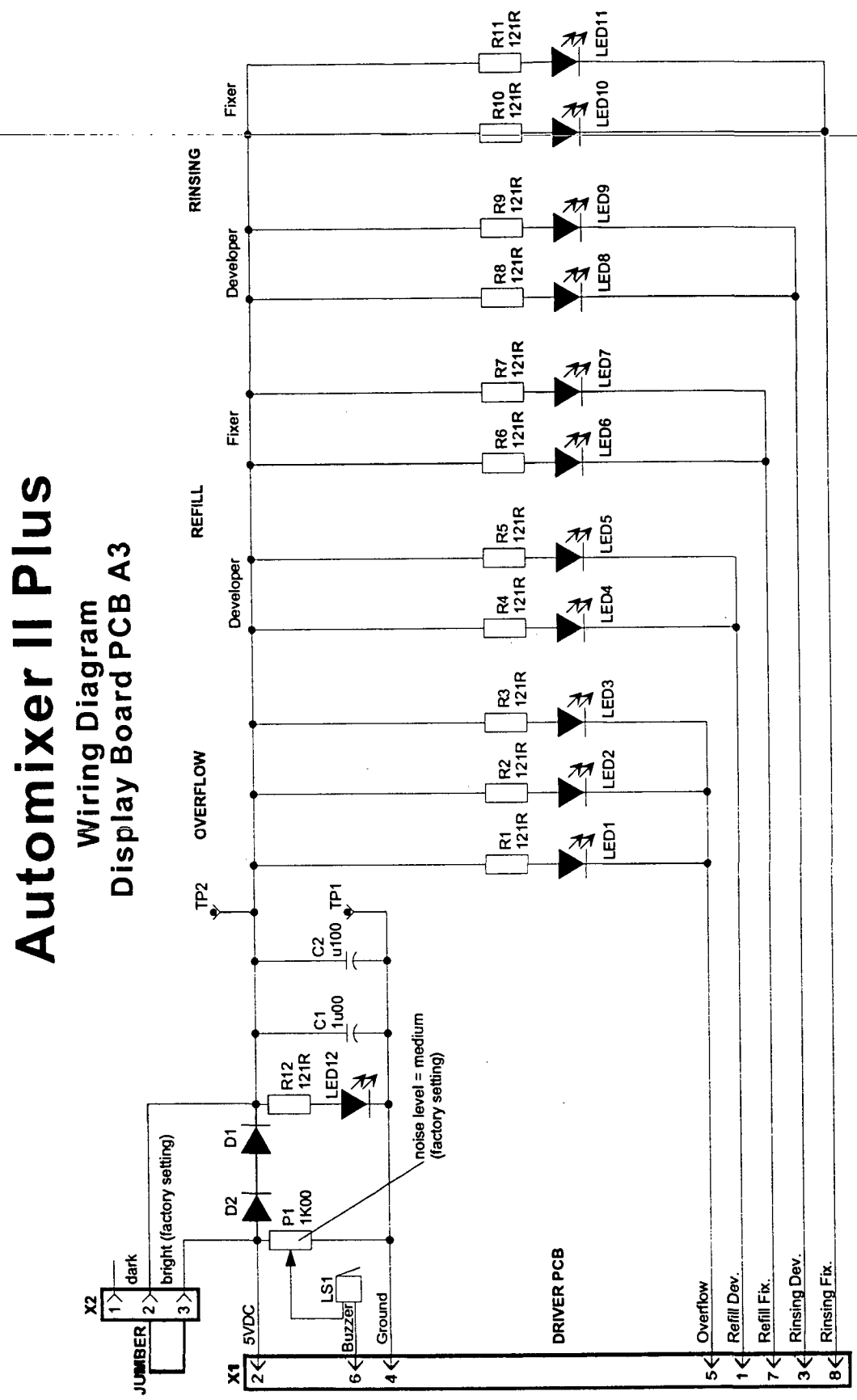

Automixer II Plus
Wiring Diagram
Display Board PCB A3
Sheet 1 of 1
RINSING
Fixer
Developer
REFILL
Fixer
Developer
OVERFLOW
R11 121R
LED11
R10 121R
LED10
R9 121R
LED9
R8 121R
LED8
R7 121R
LED7
R6 121R
LED6
R5 121R
LED5
R4 121R
LED4
R3 121R
LED3
R2 121R
LED2
R1 121R
LED1
TP2
TP1
C2 u100
C1 1u00
R12 121R
LED12
D1
D2
P1 1K00
noise level = medium (factory setting)
X2
dark
bright (factory setting)
JUMPER
LS1
Buzzer
5VDC
Ground
DRIVER PCB
X1
Overflow
Refill Dev.
Refill Fix.
Rinsing Dev.
Rinsing Fix.

figure 36

Automixer II Plus

Wiring Diagram
Service Keyboard PCB A4

Sheet 1 of 1

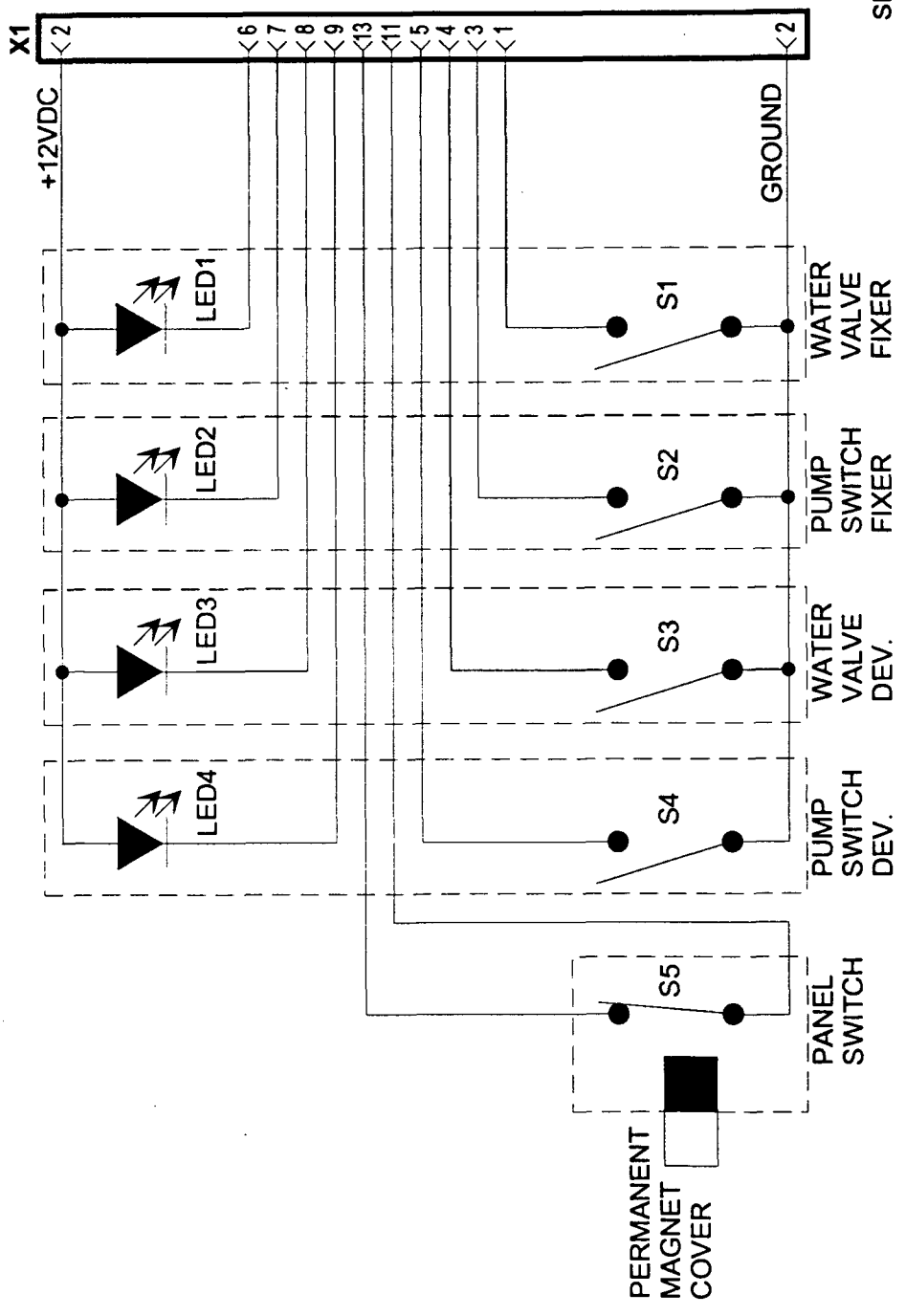
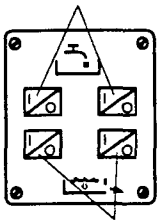
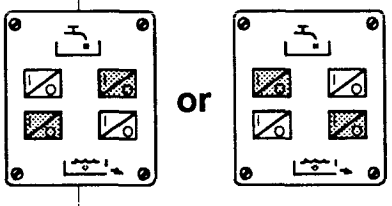
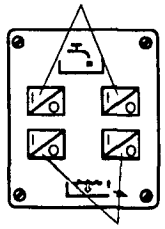
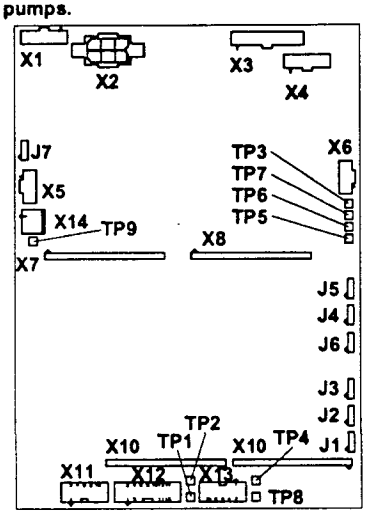


figure 37

Diagnostic

Steps to proceed	The Result should be !	No Function ? Check:
Switch on the AUTOMIXER II Plus	The POWER LED on the OPERATOR'S DISPLAY should be on and a short beep should occur.	Primary Fuse, Power Cord, Mains Voltage of the Wall Outlet.
Remove the FRONT PANEL — Manual Mode is actuated	**If the AUTOMIXER II Plus is in the Refill Mode the buzzer starts to beep fast.**	
WATER VALVE SWITCHES  SERVICE KEYBOARD CIRCULATION PUMP SWITCHES	**NOTE!** **Do not press any WATER VALVE SWITCH as long as any solution is in the TANKS.**	
Press CIRCULATION PUMP SWITCH Fixer or Dev.	The appropriate CIRCULATION PUMP should become active (Fixer or Developer).	Secundary voltages 5 VDC for the logic and 12 VDC for the VALVES and CIRCULATION PUMPS, 24 VDC for the RINSE PUMPS.
	Switch off the AUTOMIXER II Plus . To enter the Service Mode press and hold a WATER VALVE SWITCH and a CIRCULATION PUMP SWITCH while at the same time switching on the AUTOMIXER II Plus.	
	POWER LED is on and short beeps will be heard.	*Actuate the Service Mode to find out if a* error is in the system and an error code is announced by a beep.
	4 error codes will be announced by a beep in case there is a failure in the system: 1. one long beep, one short beep = DEVELOPER SENSOR defective 2. one long beep, two short beeps = FIXER SENSOR defective 3. one long beep, three short beeps = Both sensors defective 4. one long beep, five short beeps = MICROCONTROLLER BOARD defective	
(WATER VALVE SWITCHES) TRANSFER VALVES  SERVICE KEYBOARD (CIRCULATION PUMP SWITCHES) RINSE PUMPS	In the Service Mode: Press one of the WATER VALVE SWITCHES or one of the CIRCULATION PUMP SWITCHES	
	The appropriate pump should be heared running and the valve should be heared clicking.	

Diagnostic

Steps to proceed	The Result should be !	No Function ? Check:
Remove the FRONT PANEL	Test Points: TP3 = peripheral ground TP7 = 5 ± 0.2 VDC peripheral logic TP6 = V12 unregulated voltage = 17 ± 2 VDC TP5 = V24 unregulated voltage = 24 ± 2 VDC	Use a Digital Volt Meter (DVM) and check the voltages on the DRIVER BOARD PCB A2 1. for the peripheral logic (integrated circuits) and 2. the supply voltages for the valves and pumps. 
Switch off the AUTOMIXER II Plus	Leave the Service Mode	
Switch on the AUTOMIXER II Plus	Enter to the Operating Mode	
Press the CIRCULATION PUMP SWITCH (Fixer)	Voltage = 12 ± 0.2 VDC	Use a Digital Volt Meter (DVM) and check the voltage on the Driver Board PCB A2 between TP3 and connector X3 Pin1.
Press the CIRCULATION PUMP SWITCH (Dev.)	Voltage = 12 ± 0.2 VDC	Use a Digital Volt Meter (DVM) and check the voltage on the Driver Board PCB A2 between TP3 and connector X4 Pin5.
	If there are no voltages on the testpoinsts go to next step !	
Disconnect the Connentor X2 from the PCB A2	Between Pin1 and Pin2 Voltage = 18.5 VAC Between Pin3 and Pin4 Voltage = 13 VAC Between Pin5 and Pin6 Voltage = 7 VAC	Use a Digital Volt Meter (DVM) and check the AC Voltages on the Plug comming from the secundary side of the transformer.
Connect the Plug to X2 to the PCB A2		
	If only the AC Voltages are measured, change the DRIVER BOARD PCB A2 otherwise go to the next step.	

Diagnostic

Steps to proceed	The Result should be !	No Function ? Check:
Disconnect J/P1 on the ELECTRONIC BOX	The following table shows the nominal values of voltages.	Check the voltages on the connectors J1, X3, X4.

Connector J1 Pin No.	Signal Name	Component	Connector PCB A2 X3 Pin No.	X4
1	Circ Fix L	Pump 12 VDC regulated	1	
2	Circ Fix N		2	
3	Water Dev L	Valve 12 VDC unregulated	3	
4	Water Dev N		4	
5	Water Fix L	Valve 12 VDC unregulated	5	
6	Water Fix N		6	
7	Transfer Dev L	Valve 12 VDC unregulated	7	
8	Transfer Dev N		8	
9	Transfer Fix L	Valve 12 VDC unregulated	9	
10	Transfer Fix N		10	
11	Rinse Dev L	Pump 24 VDC unregulated		1
12	Rinse Dev N			2
13	Rinse Fix L	Pump 24 VDC unregulated		3
14	Rinse Fix N			4
15	Circ Dev L	Pump 12 VDC regulated		5
16	Circ Dev N			6

If all voltages are correct on the socket and on the component side, the appropriate valve or pump has to be replaced.

Switch on the AUTOMIXER II Plus	If the POWER ON LED is not illuminated	Voltage = 5 ± 0.2 VDC The POWER ON LED should be illuminated	Use a Digital Volt Meter (DVM) and check the voltage for the MICROCONTROLLER BOARD PCB A1on the DRIVER BOARD PCB A2 between TP4 (Ground) and TP8

If this voltage is correct the MICROCONTROLLER BOARD PCB A1 has to be replaced

In this case the EPROM U5 has to be removed from the defective board PCB A1 and fitted to the new board.

Check the REED CONTACT ARRAYS		Voltage = 0 VDC If the FLOAT is at the TANK bottom Voltage = 4.9 VDC If the FLOAT is at the top of the TANK	Use a Digital Volt Meter (DVM) and check the Voltage for the Reed Contact Arrays on the DRIVER BOARD PCB A2 between TP4 (Ground) and TP1 (Developer) and TP2 (Fixer)

ATTENTION !!!

TAKE CARE OF ESD INSTRUCTIONS !

OBSERVE PRECAUTIONS FOR HANDLING

ELECTROSTATIC SENSITIVE DEVICES

CUSTOMER EQUIPMENT SERVICES KODAK AG STUTTGART GERMANY